THE AMERICAN
JOURNAL OF PHARMACY.

AUGUST, 1888.

OXY SALTS OF BISMUTH.

By Frank X. Moerk, Ph. G.

Contribution from the Chemical Laboratory, Philadelphia College of Pharmacy.

While attention has frequently been called to the high percentage of oxide which is yielded by the commercial subnitrate, the formula $(BiO)_2\ CO_3.H_2O$ appears to be accepted as representing the composition of the subcarbonate.

Some recent analyses of these compounds may be of interest, although no attempt was made to represent the different makes.

BISMUTH SUBNITRATE.

These were examined for:

Moisture, by drying at 140°C. for 1½ hours. It was ascertained by analysis that the nitric acid or nitric oxide was not volatilized at this temperature.

Nitric oxide, by boiling with excess of decinormal NaOH for one hour and then titrating the excess of NaOH with decinormal oxalic acid. Every cc. NaOH represents 0·0054 N_2O_5. Phenolphthalein was used as the indicator. If other acids are present, this method furnishes high results, but in the samples examined only traces of HCl were found. Bismuth oxide was determined by ignition.

	H_2O.	N_2O_5	Bi_2O_3	Impurities.
$BiONO_3.H_2O$	5·88	17·64	76·47	
No. 1.	2·95	15·98	80·96	H_2CO_3 and HCl.
No. 2.	3·02	16·20	80·70	
No. 3.	3·62	16·04	80·35	HCl.
No. 4.	2·35	15·77	81·85	HCl

Calculating the amount of subnitrate from the N_2O_5

	$BiONO_3$	Bi_2O_3	H_2O
$BiONO_3.H_2O$	94·12		5·88
No. 1.	85·23	11·71	2·95
No. 2.	86·40	10·50	3·02
No. 3.	85·55	10·84	3·62
No. 4.	84·11	13·51	2·35

It will be seen that the amount of water present is generally less than half of that required in the formula $BiONO_3.H_2O$. The anhydrous samples are very hygroscopic, regaining during twelve hours exposure almost the entire amount present in the sample before heating, (No. 1. regained 2.39 per cent. moisture). The oxide is considered as being produced by washing the salt, and a few experiments in this direction may be interesting. Ten gm. of the subnitrate (No. 1.) were placed in a small percolator and water poured over it, the percolate was caught in portions of 10 cc. and the acid present estimated by means of dilute soda solution; the quantity indicated was surprisingly constant, equaling 0.03 per cent. and containing bismuth in solution. If the percolate was returned, it contained acid to the extent of 0.06 per cent. and a correspondingly larger quantity of bismuth in solution; on allowing the percolator to stand over night and then displacing the liquid by fresh additions of water, the quantity of acid increased to 0.15 per cent. This is certainly of interest and might suggest that in the preparation of subnitrate the portion of water into which the acid solution of bismuth is poured, should be sufficient to furnish an acidulated water containing the above amount of acid. If the strength of the acid solution is less, the tendency is to make a more basic salt by abstraction of acid. The bismuth dissolved in the 0.15 per cent. acid can, after draining the precipitate, be collected after addition of sodium carbonate and be used in the preparation of the next lot. It would be desirable not to wash the precipitate, but to absorb the excessive liquid by some porous material after thorough draining. The U. S. P. (1870) process furnished an acid liquid—before the addition of the ammonia water—containing 0.04% HNO_3, which the ammonia water reduced to about 0.01 per cent. and at the same time formed a solution containing approximately 0.04 per cent. ammonium nitrate. Although it is known that the latter salt prevents (if present to the extent of 0.2 per cent.) the removal of nitric acid from basic bismuth salts, still it is doubtful if any favorable results are to be had from its

presence, after the nitric acid has been liberated and the more basic salt formed. To this very dilute acidulated solution is perhaps due the excessive basicity of the subnitrate to a greater extent than to the washing which is generally believed to be the cause.

BISMUTH SUBCARBONATE.

Moisture, bismuth oxide and nitric oxide as in the case of subnitrate. Carbon dioxide by loss on addition of H_2SO_4 in Schroetter's apparatus.

	H_2O	CO_2	Bi_2O_3	N_2O_5	Other impurities.
$(BiO)_2CO_3.H_2O$	3·40	8·30	88·30		
No. 1.	1·00	7·90	89·90	1·19	HCl. }
No. 2.	0·40	7·50	91·70	0·22	HCl. } *Traces.*
No. 3.	0·20	8·15	90·64	0·92	HCl. }

Calculating $(BiO)_2CO_3$ from CO_2 and $BiONO_3$ from N_2O_5.

	$(BiO)_2CO_3$	H_2O	$BiONO_3$	Bi_2O_3
$(BiO)_2CO_3.H_2O$	96·60	3·40		
No. 1.	91·93	1·00	6·35	0·71
No. 2.	87·50	0·40	1·17	10·75
No. 3.	94·84	0·20	4·91	

These results also show the absence of an amount of water representing a molecule. In the National Dispensatory is the statement that, if the mixture resulting from the addition of the bismuth nitrate to the sodium carbonate solution be boiled, an anhydrous subcarbonate is produced. The presence of the subnitrate was detected in each case by using H_2SO_4 tinted with indigo solution. To ascertain if this impurity was due to defective manipulation two experiments were made, one in which the mixture of bismuth nitrate and excess of sodium carbonate was heated to 55°C., in the other heat was applied so as to keep the mixture very near the boiling point; both precipitates were thoroughly washed, but on examination both contained nitric acid, in small quantity; the one prepared at the lower temperature containing more than the other. In consideration of these experiments and the fact that the commercial product contains such a small percentage of water, the recommendation is thought well-based to make the subcarbonate by using a boiling solution of sodium carbonate and adding thereto the bismuth nitrate solution with the additional precaution of boiling vigorously for several minutes after the

addition of the latter solution. Although yielding an anhydrous product, it will be free from more than traces of nitrate.

BISMUTH OXYIODIDE.

Although this preparation does not excite so much attention as it did about a year ago, attention is called to it again in this paper because of the examination of the other two salts. The difficulties which were experienced by most writers on this subject are to be traced to the admixture of the subnitrate with oxide, the latter compound not being altered by KI, and also preventing a portion of the subnitrate from undergoing this change into oxyiodide.

But now knowing the limits in which oxide is present in the subnitrate, the requisite amount of HNO_3 can be added to the so-called subnitrate, and the true subnitrate or its equivalent obtained, which easily enters into reaction with KI and forms the pure oxyiodide and KNO_3.

In the following formula sufficient nitric acid is used to convert a subnitrate containing about 18 per cent. of oxide into the true subnitrate, the presence of the small quantity of free HNO_3 which may be present being in a large quantity of water exerts no decomposing action upon the oxyiodide, although if an excess of KI be present, vapors of iodine may be evolved.

Bismuth subnitrate	20 gm.
HNO_3 (sp. gr. 1·42)	1 cc.
Water	300 cc.
KI	12 gm.

Boil the subnitrate with the nitric acid and 200 cc. water for 10 minutes, then add the potassium iodide dissolved in 100 cc. water, boil for half hour, filter and wash thoroughly until washings cease to give more than turbidity with silver nitrate. Dry at a temperature not above 100° C.

This furnishes a pure salt, and although in an extremely fine crystalline powder, shows its crystalline characteristic by a glistening film on the interior of the bottle in which it is kept.

Ergot of Oats has been used by Dr. Bousquet (*Union Méd.*, Feb. 19, 1888) who observed that its action was as prompt and lasting as that of ergot of rye, and that it has the advantage of acting as a general excitant and restorative in cases of prostration from prolonged labor or copious loss of blood.

ANALYSES OF AMERICAN PLANTS.

Abstracts from Theses.

Rhus glabra.—Mainly with the view of determining the amount of tannin present at different periods, Jos. A. Palen, Ph. G., collected two lots of leaves, July 15th and August 30th, from plants growing on the bluffs bordering the Mississippi river near Dubuque, Iowa. These were dried and powdered, and yielded the following analytical results:

	July.		August.	
Petroleum extract	.....	5·72	.....	5·12
Volatile oil	·2	.....	·1	.....
Wax	1·5	.....	1·22	.....
Fats	4·02	.....	3·8	.....
Ether extract	.....	5·6	.....	4·85
Of which soluble in water	1·3	.....	1·55	.....
Alcohol extract	.....	14·3	.....	13·6
Tannin	10·8	.....	10·1	.....
Altered tannin, resin, etc	3·5	.....	3·5	.....
Water extract	.....	10·92	.....	12·15
Glucose	·87	.....	·63	.....
Cane sugar	·18	.....	·21	.....
Other carbohydrates	3·04	.....	4·2	.....
Mucilage	4·78	.....	6·35	.....
Extracted by soda	.....	13·29	.....	12·05
Albuminoids	6·21	.....	5·6	.....
Extracted by HCl	.....	4·72	.....	5·54
Calcium oxalate	3·36	.....	3·87	.....
Treatment with Cl (hydrocellulose)	.....	6·72	.....	9·17
Treatment with HNO_3 (incrusting matter)	.....	1·41	.....	3·76
Moisture	.....	4·6	.....	4·4
Ash	.....	·34	.....	·34
Residue	.....	25·2	.....	27·84

A separate estimation of tannin was made by precipitating the decoction of the leaves with gelatin, and multiplying the weight by 0.54. The July lot yielded 16·36 per cent., the August lot 15·75 per cent. The tannin strength of both samples is practically alike, but is not so large as that of sumac leaves from Virginia, which yield from 20 to 25 per cent.

The coloring matter exists in very small amounts, and is probably alike with that of quercitron bark. The ethereal and alcoholic extracts of the leaves were examined; cloth prepared with different mordants, like ferric acetate, stannous chloride, copper sulphate, potas-

sium bichromate and alum, was dyed, the color being like that obtained with quercitron bark.

Helianthemum canadense was examined by Wm. Crutcher, Ph. G. Petroleum benzin extracted 1·15 per cent., containing a little volatile oil, wax and saponifiable fat. Ether dissolved 1·4 per cent. wax chlorophyll, etc. Alcohol took up 23·05 per cent., nine-tenths of which was soluble in water; the tannin was estimated by precipitating with lead acetate and cupric acetate, the results of both experiments indicating 10·8 per cent. of tannin. Water dissolved from the powder 7 per cent. mucilage, sugar, etc.; and dilute soda solution took up a little over 4 per cent. of pectin and albuminoids. The presence of starch was determined, but its amount not estimated. The air-dry powder contained 7 per cent. of moisture and 3 per cent. of ash. Indications of a glucoside having been obtained, the alcoholic extract was treated with water and the solution agitated with benzol; on evaporating this liquid fine needles were left, but not further examined.

Pilea pumila.—Frank R. Weiser, Ph.G., reports that this plant has some reputation for counteracting the effect produced by Rhus Toxicodendron. The fresh plant is bruised, and then applied either by binding it on the eruption, or by rubbing the affected parts with it; the effect seems to be instantaneous, allaying the itching and preventing the spreading of the eruption. The plant is popularly known as *clearweed* and *richweed*, and grows from Canada to Florida. After drying it has a somewhat fragrant tea-like odor. An analysis of the dried and powdered plant yielded the following results:

Extracted by petroleum spirit (volatile oil, ·26; fat, ·70; wax, ·28; chlorophyll, ·08)	1·32
" by ether (mostly chlorophyll)	1·52
" by alcohol (glucoside, etc.)	1·00
" by water (mucilage, dextrin, sugars, etc.)	8·89
" by dilute HKO	4·90
" by dilute HCl	9·02
Lignin	3·25
Wood fibre, ash and moisture	66·33

A portion of the alcoholic tincture obtained above on being allowed to evaporate spontaneously, yielded crystals, which responded to the tests for glucosides. Half pound of the powder was then percolated with alcohol, the tincture concentrated by distillation, the extract

treated with water, and the aqueous solution agitated with chloroform; the residue obtained on evaporating the chloroform was redissolved in water and evaporated in a desiccator, when a substance was left, having a strong vanilla-like odor, and which did not respond to tests for either alkaloids or glucosides.

REFERENCE TABLE OF DOSES.

By Joseph W. England, Ph. G.

(*Concluded from page* 343.)

In conclusion, the writer would distinctly state, that he does not claim perfection for this table, but he has earnestly striven, in its composition, to give not the highest possible dose, nor the lowest, but a fair and accurate expression of average doses, based upon such authorities as Wood, Stillé, Pepper, Bartholow, Squire, and others, together with data obtained in the annual compounding of 100,000 prescriptions in the Philadelphia Hospital. He presents his results with the hope that they may serve as a basis for more enlarged work, in this direction, by the Revision Committee, in the coming decennial revision of our Pharmacopœia.

The name of the drug is given in latin, while, for facility of reference, the dose is expressed in numerals instead of roman figures, which would doubtless be more consistent, but not nearly as ready of access.

DRUG.	DOSE.
Acetanilidum	3–5–15 gr.
Acet. Lobeliæ, Expect.	¼–½–1 fl. dr.
Nauseant	1–1½–2 fl. dr.
" Opii	5–10–15 m.
Maximum	15–20 m.
" Sanguinar, Expect.	5–10–15 m.
Emetic	½–1–2 fl. dr.
" Scillæ	10–15–30 m.
Acid. Acetic. Dilut.	2–3–4 fl. dr.
" Arsenios	1/32–1/24–1/16 gr.
Max.	1/16–1/10 gr.
" Benzoic	10–15–30 gr.
" Boric	10–15–30 gr.
" Carbolic	1–2–3 gr.
" Citric	10–15–30 gr.
Acid. Gallic	5–15–30 gr.
" Hydrobrom. Dilut.	½–1–2 fl. dr.
Max.	2–4 fl. dr.
" Hydrochlor. Dilut.	10–15–30 m.
Max.	30–60 m.
" Hydrocyan. Dilut.	1–2–3 m.
Max.	3–5 m.
" Lactic	½–1–2 fl. dr.
" Nitric. Dilut.	5–15–30 m.
Max.	30–60 m.
" Nitrohydrochlor.	2–3–5 m.
Max.	5–10 m.
" " Dilut.	10–15–20 m.
Max.	20–30 m.
" Phosphoric. Dilut.	10–30–60 m.

DRUG.	DOSE.
Acid. Salicylic.	10–15–30 gr.
" Sulphuric. Dilut.	10–15–20 m.
Max.	20–30 m.
" Sulphuric. Arom.	5–8–10 m.
Max.	10–15 m.
" Sulphurosum	½–1–2 fl. dr.
" Tannic	3–5–10 gr.
" Tartaric	10–15–30 gr.
Aconitina	$\frac{1}{250}$–$\frac{1}{125}$–$\frac{1}{100}$ gr.
Max.	$\frac{1}{100}$–$\frac{1}{80}$–$\frac{1}{60}$ gr.
" (Duquesnel's)	$\frac{1}{400}$–$\frac{1}{200}$–$\frac{1}{150}$ gr.
Max.	$\frac{1}{150}$–$\frac{1}{125}$–$\frac{1}{100}$ gr.
Æther Aceticus	10–15–30 m.
Aloe	5–10–20 gr.
Aloinum	¼–2–3 gr.
Alumen	10–15–60 gr.
Alumen Exsiccatum	5–10–30 gr.
Ammon. Benzoas	10–15–30 gr.
" Bromid., Sedative.	10–20–30 gr.
" " Hypnotic.	30–45–60 gr.
" Carbonas	5–10–15 gr.
" Chloridum	5–10–30 gr.
" Iodidum	3–5–10 gr.
" Phosphas	10–15–30 gr.
" Sulphoichthyolas	3–5–10 gr.
" Valerianas	2–5–8 gr.
Amyl Nitris	2–3–5 m.
Antifebrinum	3–5–15 gr.
Antim. et Potass. Tart.	$\frac{1}{8}$–¼–½ gr.
Emetic.	1–2–3 gr.
Antimonii Oxidum	1–2–3 gr.
" Oxysulphuretum.	1–2–3 gr.
" Sulphuratum	1–2–3 gr.
Antipyrinum	5–10–30 gr.
Apiol	2–3–5 m.
Apomorph. Hydrochlor.	$\frac{1}{16}$–$\frac{1}{12}$–$\frac{1}{8}$ gr.
Max.	$\frac{1}{8}$–¼ gr.
Aqua Ammoniæ	10–15–30 m.
" Amygdalæ Amaræ	½–1–2 fl. dr.
" Anethi	¼–½–1 fl. oz.
" Anisi	¼–½–1 fl. oz.
" Aurantii Florum	¼–½–1 fl. oz.
" Camphoræ	¼–½–1 fl. oz.
" Capsici	¼–½–1 fl. oz.
" Carui	¼–½–1 fl. oz.

DRUG.	DOSE.
Aqua Chlori	¼–½–1 fl. oz.
" Chloroformi	½–1–2 fl. oz.
" Cinnamomi	¼–½–1 fl. oz.
" Creasoti	2–3–4 fl. dr.
" Fœniculi	¼–½–1 fl. oz.
" Menthæ Piperitæ.	¼–½–1 fl. oz.
" Menthæ Viridis	¼–½–1 fl. oz.
" Pimentæ	¼–½–1 fl. oz.
" Rosæ	¼–½–1 fl. oz.
Argenti Iodidum	½–1–2 gr.
" Nitras	⅛–¼–½ gr.
" Oxidum	½–1–2 gr.
Arsenii Iodid	$\frac{1}{24}$–$\frac{1}{16}$–⅛ gr.
Max.	⅛–⅙ gr.
Asafœtida	5–10–15 gr.
Atropina, Atrop. Sulph.	$\frac{1}{96}$–$\frac{1}{80}$–$\frac{1}{64}$ gr.
Max.	$\frac{1}{64}$–$\frac{1}{48}$ gr.
Auri et Sod. Chlorid	$\frac{1}{16}$–$\frac{1}{12}$–$\frac{1}{10}$ gr.
Max.	$\frac{1}{10}$–⅛ gr.
Bismuthi et Ammonii Citras	1–3–5 gr.
Bismuthi Subcarbonas	10–30–60 gr.
" Subiodidum	10–15–30 gr.
" Subnitras	10–30–60 gr.
" Tannas	10–15–30 gr.
Caffeina, Caffeinæ Citras	1–2–3 gr.
Max.	3–5 gr.
Calcii Bromid., Sedative.	10–20–30 gr.
" Hypnotic.	30–45–60 gr.
Calcii Carbonas	10–30–60 gr.
" Hypophosphis	5–15–30 gr.
" Phosphas	10–15–30 gr.
Calx Sulphurata	$\frac{1}{12}$–$\frac{1}{8}$–½ gr.
Cambogia	1–3–5 gr.
Camphora	1–5–10 gr.
Camphora Monobromata	1–3–5 gr.
Cantharis	½–1–2 gr.
Capsicum	3–5–10 gr.
Carbo Ligni	1–2–4 dr.
Catechu	10–15–30 gr.
Cerii Oxalas	1–3–5 gr.
Chloral	10–20–30 gr.
Maximum	30–45 gr.
Chloral Butylicum	3–5–10 gr.

DRUG.	DOSE.
Chinoidinum.....	3–5–10 gr.
Chloroform.....2–3–5 m.	8–12–20 gtt.
Max. 5–10 m.	20–40 gtt.
Cinchona.....	½–1–1½ dr.
Cinchonid. Sulph. { Tonic	3–5–10 gr.
Cinchonin. Sulph. { Antipyr.	10-20-30 gr.
Cocain. Hydrochlor.....	⅛–¼–½ gr.
Max.	½–1 gr.
Codeina,.....	¼–½–1 gr.
Codeinæ Sulphas { Max.....	1–2–3 gr.
Confectio Piperis.....	1–2–3 dr.
Confectio Sennæ.....	2–3–4 dr.
" Sulphuris.....	2–3–4 dr.
Copaiba.....	½–1–1 fl. dr.
Creasotum.....	1–3–5 m.
Creta Præparata.....	10–30–60 gr.
Crotonchloral, see Chloral Butylicum.	
Cubeba.....	½–1–3 dr.
Cupri Acetas.....	⅛–¼–½ gr.
Max.....	½–1 gr.
Cupri Sulphas, Astringent	¼–1–2 gr.
" Emetic...	5–10 gr.
Digitalinum.....	1/64–1/48–1/24 gr.
Max.....	1/24–1/12 gr.
Digitalis.....	½–1–2 gr.
Max.....	2–3 gr.
Elaterinum.....	1/32–1/24–1/16 gr.
Max.....	1/16–1/12 gr.
Elaterium,(Clutterbuck's)	1/12–1/10–1/8 gr.
Max..	⅛–¼ gr.
Ergotinum, (Bonjean's).	3–5–10 gr.
Ext. Aconiti.....	⅛–¼–½ gr.
Max.....	⅛–½ gr.
" Aloes Aquosum.	3–5–10–gr.
" Belladon. Alcoh.	⅛–¼–½ gr.
Max.	½–¾ gr.
" Buchu Fluidum.	¼–½–1 fl. dr
" Cacti Grandiflori Fluidum.....	1–3–5 m.
" Cannab. Indic...	⅛–¼–½ gr.
Max.	½–1 gr.
" Capsici Fluidum	½–1–2 m.
" Castaneæ Fluid..	½–1–2 fl. dr.
" Chimaphilæ Fl..	½–¾–1 fl. dr.
Ext. Cimicifugæ Fl.....	½–¾–1 fl. dr.
" Cinchonæ.....	10–15–30 gr.
" Cinchonæ Fl.....	½–1–2 fl. dr.
" Colchici Rad.....	¼–½–1 gr.
Max.	1-2-3 gr.
" Colocynth Comp.	5-15-30 gr.
" Conii Alcohol....	¼–½–1 gr.
Max.	1-2 gr.
" Conii B. P.....	½-1-2 gr.
Max.	2-4-6 gr.
" Conii Fluidum...	1-3-5 m.
Max.	5-10 m.
" Convallariæ Fl...	3-5-10 m.
" Cubebæ Fluid...	10-15-30 m.
" Cypripedii Fl....	10-15-30 m.
" Digitalis.....	⅛-¼-½ gr.
Max...	½-1 gr.
" Dulcamaræ Fl...	½-1-2 fl. dr.
" Ergotæ.....	3-5-15 gr.
" Ergotæ Fluid.....	½-1-2 fl. dr.
Max.	2-4 fl. dr.
" Erythroxyli. Fl..	½–½–1 fl. dr.
Max.	1–2 fl. dr.
" Eucalypti.....	10–15–30 m.
" Euonymi.....	1–3–5 gr.
" Euonymi Fluid.	¼–½–1 fl. dr.
" Eupatorii Fluid.	¼–½–1 fl. dr.
" Frangulæ Fluid.	¼–½–1 fl. dr.
" Gelsemii Fluid...	1–3–5 m.
" Gentianæ.....	3–5–15 gr.
" Gentianæ Fluid.	¼–½–1 fl. dr.
" Geranii Fluid....	½–1–2 fl. dr.
" Glycyrrhizæ.....	¼–½–1 dr.
" Glycyrrhizæ Fl..	½–1–2 fl. dr.
" Gossypii Fluid...	½–¾–1 fl. dr.
Max.	1–2 fl. dr.
" Granati Rad.Cort. Fluidum....	½–1–2 fl. dr.
" Grindeliæ Fluid.	¼–½–1 fl. dr.
" Hæmatoxyli.....	5–10–30 gr.
" Hæmatoxyli Fl..	½–½–1 fl. dr.
" Hamamelidis Fl.	½–½–1 fl. dr.
" Helianthemi.....	5–10–15 m.
" Humuli Fluid....	10–30–60 m.
" Hydrastis Fluid.	½–1–2 fl. dr.

DRUG.	DOSE.
Ext. Hyoscyami Alc.....	1–2–3 gr.
Max.	3–5 gr.
" Hyoscyami Fl...	3–5–10 m.
Max.	10–15 m.
" Ignatiæ.....	$\frac{1}{6}$–$\frac{1}{4}$–$\frac{1}{2}$ gr.
Max.	$\frac{1}{2}$–1 gr.
" Ipecac Fl. Expect.	3–5–10 m.
" Emetic.	$\frac{1}{2}$-$\frac{1}{2}$-1 fl. dr.
" Iridis.....	1–3–5 gr.
" Iridis Fluidum...	5–10–20 m.
" Jalapæ (U. S. P., 1870).....	10-15-20 gr.
" Juglandis.....	5-15-30 gr.
" Juglandis Fluid.	$\frac{1}{2}$-1-2 fl. dr.
" Krameriæ.....	5-10-20 gr.
" Krameriæ Fluid.	$\frac{1}{2}$-$\frac{1}{2}$-1 fl. dr.
" Lappæ Fluidum.	$\frac{1}{2}$-$\frac{1}{2}$-1 fl. dr.
" Leptandræ.....	1-3-5 gr.
" Leptandræ Fl....	$\frac{1}{2}$-$\frac{1}{2}$-1 fl. dr.
" Lobeliæ Fl., Expect.	1-3-5 m.
" Emetic.	10-30 m.
" Lupulini Fluid...	10-15-30 m.
" Malti.....	2-4-8 dr.
" Matico Fluidum.	$\frac{1}{2}$-1-2 fl. dr.
" Nucis Vomicæ...	$\frac{1}{2}$-$\frac{1}{2}$-1 gr.
Max.	1-2 gr.
" Opii.....	$\frac{1}{2}$-$\frac{1}{2}$-1 gr.
Maximum..	1-1$\frac{1}{2}$ gr.
" Pancreaticum....	3-5-10 gr.
" Pareiræ Fluidum	$\frac{1}{2}$–1–2 fl. dr.
" Physostigmatis..	$\frac{1}{16}$–$\frac{1}{12}$–$\frac{1}{8}$ gr.
Max.	$\frac{1}{8}$–$\frac{1}{4}$ gr.
" Phytolaccæ Rad. Fl.	5-15-30 m.
" Pilocarpi Fluid..	10–15–30 m.
" Pimentæ Fluid...	10–15–30 m.
" Podophylli.....	1–3–5 gr.
" Podophylli Fluid.	5–10–15 m.
" Pruni Virg. Fluid.	$\frac{1}{2}$–$\frac{3}{4}$–1 fl. dr.
Max.	1–2 fl. dr.
" Quassiæ.....	1-2-3 gr.
" Quassiæ Fluidum.	5-10-30 m.
" Rhamni Purshianæ	1-3-5 gr.
" Rhamni Pursh. Fl.	$\frac{1}{2}$-$\frac{1}{2}$-1 fl. dr.
" Rhei.....	5-10-15 gr.
" Rhei Fluidum...	$\frac{1}{2}$-$\frac{1}{2}$-1 fl. dr.

DRUG.	DOSE.
Ext. Rhois Glabræ Fl....	$\frac{1}{2}$-1-2 fl. dr.
" Rosæ.....	$\frac{1}{2}$-1-2 fl. dr.
" Sarsaparillæ Fl..	$\frac{1}{2}$-$\frac{1}{2}$-1 fl. dr.
" " Comp. Fl.	$\frac{1}{2}$-1-1$\frac{1}{2}$ fl. dr.
" Scoparii.....	$\frac{1}{2}$-$\frac{1}{2}$-1 fl. dr.
" Scutellariæ Fl....	$\frac{1}{2}$-1-2 fl. dr.
" Senegæ Fluid.....	3-5-15 m.
" Sennæ Fluidum.	1-2-4 fl. dr.
" Serpentariæ Fl...	$\frac{1}{2}$-$\frac{1}{2}$-1 fl. dr.
" Spigeliæ.....	$\frac{1}{2}$-1-2 fl. dr.
" Spigel. et Sennæ Fl.	2-3-4 fl. dr.
" Stillingiæ Fluid..	$\frac{1}{2}$-$\frac{1}{2}$-1 fl. dr.
" Stramonii.....	$\frac{1}{6}$-$\frac{1}{4}$-$\frac{1}{2}$ gr.
Max...	$\frac{1}{2}$-1 gr.
" Sumbul.....	1-2-3 gr.
" " Fluidum..	15–30–60 m.
" Taraxaci.....	5–10–30 gr.
" Taraxaci Fluid...	1–2–3 fl. dr.
" Tritici Repent Fl.	1–2–4 fl. dr.
" Ustilag. Mayd. Fl.	$\frac{1}{2}$-$\frac{1}{2}$-1 fl. dr.
" Uvæ Ursi Fluid..	$\frac{1}{2}$-$\frac{3}{4}$-1 fl. dr.
" Valerianæ Fluid.	$\frac{1}{2}$-$\frac{3}{4}$-1 fl. dr.
" Viburni Prunif. Fl.	$\frac{1}{2}$-$\frac{1}{2}$-1 fl. dr.
" Xanthoxyli Fl...	$\frac{1}{2}$-$\frac{3}{4}$-1 fl. dr.
" Zingiberis Fl.....	10–15–30 m.
Fel Bovinum Pur.....	3–5–10 gr.
Ferri Arsenias.....	$\frac{1}{24}$–$\frac{1}{12}$–$\frac{1}{8}$ gr.
Max.....	$\frac{1}{8}$–$\frac{1}{4}$–$\frac{1}{2}$ gr.
" Bromidum.....	$\frac{1}{2}$-1-2 gr
" Citras.....	5–10–15 gr.
" et Ammon. Citras.	5–10–15 gr.
" " " Sulph.	5–10–15 gr.
" " " Tartr..	10–15–30 gr.
" " Potass. Tartr.....	10–15–30 gr.
" " Quininæ Citras..	3–5–10 gr.
" " Strychn. Citr.....	1–2–3 gr.
Max.	3–5 gr.
" Hypophosphis.....	5–8–10 gr.
" Iodidum.....	1–3–5 gr.
" Lactas.....	1–3–5 gr.
" Oxalas.....	1–2–3 gr.
" Phosphas.....	5–8–10 gr.
" Pyrophosphas.....	2–3–5 gr.
" Subcarbonas.....	5–15–30 gr.
" Sulphas.....	1–3–5 gr.

DRUG.	DOSE.
Ferri Sulphas Exsic.....	½–1–3 gr.
" Valerianas.....	½–1–2 gr.
Ferrum Reductum.....	1–3–5 gr.
Glycerinum.....	1–2–3 fl. dr.
Glycyrrhizin. Ammon...	5–10–15 gr.
Hydrarg. Chlor. Corr....	1/32–1/16–1/12 g.
Max.	1/12–1/8 gr.
" Chlor. Mite, Alt.	1–2–3 gr.
Purg.	5–10–15 gr.
" Cyanid.....	1/24–1/16–1/12 gr.
Max.....	1/12–1/8 gr.
" Iodid. Rub.....	1/16–1/8–1/4 gr.
Max.	1/4–1/3 gr.
" Iodid. Vir.....	1/8–1/2–1 gr.
Max.	1–2–3 gr.
" Subsulph. Fla., Alt.	1/4–1/3–1/2 gr.
Emet.	2–5 gr.
Hydrargyrum cum Creta.	3–5–10 gr.
Hydrochinonum.....	5–10–15 gr.
Hyoscyaminæ Sulph.....	1/64–1/48–1/32 gr.
Max.	1/32–1/16 gr.
Hyoscinæ Hydrobrom...1/128–1/96–1/64 gr.	
Max.	1/64–1/48 gr.
Ichthyol, (See Ammonii or Sodii Sulphoichthyol.)	
Infus. Digitalis.....	2–3–4 fl. dr.
Max.....	4–8 fl. dr.
Infus. Lulpuli, B. P.....	1–2–4 fl. oz.
Iodoformum	½–1–3 gr.
Iodolum.....	½–1–3 gr.
Ipecacuanha, Expect....	¼–1–2 gr.
Emetic....	10–20–30 gr.
Jalapa.....	10–15–30 gr.
Kairina.....	3–5–15 gr.
Liq. Ammon. Acet.....	½–1–2 fl. oz.
" Acidi Arseniosi..	3–5–7 m.
Max.	7–10 m.
" Ars. et Hydrarg. Iod.	3-5-10 m.
Max.	10–15 m.
" Calcis.....	½–1–4 fl. oz.
" Ferri Chloridi...	3–5–10 m.
" " Dialysat..	10–15–30 m.
" " Nitratis...	5–10–15 m.
" Pepsini.....	½–1–2 fl. oz.
" Potassæ.....	10–15–30 m.

DRUG.	DOSE.
Liq. Potas. Arsenit.....	3–5–7 m.
Max.	7–10 m.
" Potas. Citrat.....	¼–½–1 fl. oz.
" Sod. Arseniat....	3–5–7 m.
Max.	7–10 m.
Lithii Benzoas.....	10-15-30 gr.
" Bromidum.....	5-10-30 gr.
" Carbonas.....	3-5-15 gr.
" Citras.....	10-15-30 gr.
" Salicylas.....	10-15-30 gr.
Lupulinum.....	5-10-15 gr.
Magnesia ponderosa.....	½–2–2½ dr.
Magnesii Carbonas.....	1–2–3 dr.
Magnesii Sulphas.....	½–1–1½ oz.
Magnesii Sulphis.....	10–15–30 gr.
Mangani Oxidum Nigr..	3–5–15 gr.
" Sulphas.....	5–10–15 gr.
Massa Copaibæ.....	5–15–30 gr.
" Ferri Carbonat...	3–5–7 gr.
" Hydrargyri.....	3–5–10 gr.
Menthol.....	1–3–5 gr.
Mist. Ammoniaci.....	¼–½–1 fl. oz.
" Asafœtidæ.....	¼–½–1 fl. oz.
" Cretæ.....	¼–½–1 fl. oz.
" Ferri Composita...	½–1–2 fl. oz.
" Ferri et Ammon. Acet.....	½–¾–1 fl. oz.
" Glycyrrh. Comp...	2-4-6 fl. dr.
" Magnesiæ et Asaf. (for children)...	10-15-30 m.
" Potass. Citratis.....	¼–½–1 fl. oz.
" Rhei et Sodæ.....	½-1-2 fl. dr.
Morphinæ Acetas.....	⅛–¼–⅓ gr.
Max...	⅓–½ gr.
" Hydrochlor. } ...	1/12–1/8–¼ gr.
" Sulphas } Max.	¼–⅓–½ gr.
Naphthalinum.....	3–5–10 gr.
Nitroglycerinum ..... { (1% solution)	½–1–3 m.= 1–2–6 gtt.
Max.....	3-5 m.
Oleoresina Aspidii.....	½–¾–1 fl. dr.
" Capsici.....	¼–½–1 m.
" Cubebæ.....	5–15–30 m.
" Lupulini.....	3–5–7 m.
" Piperis.....	¼-1-2 m.

DRUG.	DOSE.
Oleoresina Zingiberis....	½-1-2 m.
Oleum Chenopodii.....	3-5-10 m.
" Copaibæ.....	5-10-15 m.
" Cubebæ.....	5-10-15 m.
" Erigerontis.....	5-10-30 m.
" Eucalypti.....	5-10-15 m.
" Gaultheriæ.....	5-15-30 m.
" Juniperi.....	5-10-15 m.
" Menthæ Pip.....	1-3-5 m.
" Menthæ Vir.....	1-3-5 m.
" Morrhuæ.....	¼-½-1 fl. oz.
" Phosphoratum.	1-2-3 m.
Max.	3-5 m.
" Ricini.....	½-1-1½ fl. oz.
" Sabinæ.....	1-3-5 m.
" Santali.....	10-15-30 m.
" Succini.....	5-10-15 m.
" Terebin .. Stim.	5-10-30 m.
" Terebin .. Anthel.	2-3-4 fl.dr.
" Tiglii.....	½-1-2 m.
Paraldehydum.....	¼-½-1 fl. dr.
Max....	1-2 fl. dr.
Pepsinum (scale).....	3-5-10 gr.
Pepsinum Saccharatum	15-30-60 gr.
Picrotoxinum.....	$\frac{1}{90}$-$\frac{1}{60}$-$\frac{1}{04}$ gr.
Max.....	$\frac{1}{64}$-$\frac{1}{24}$ gr.
Pilocarpinæ Hydrochlor.	⅛-¼-⅓ gr.
Max.	⅓-½ gr.
Pil. Aloes.....	2-3-5 p.
" Aloes et Asafœtidæ..	2-3-5 p.
" " " Ferri.....	1-2-3 p.
" " " Mastiches..	2-3-5 p.
" " " Myrrhæ.....	2-3-5 p.
" Antimonii Comp...	1-2-3 p.
" Asafœtidæ.....	2-3-5 p.
" Catharticæ Comp...	2-3-5 p.
" Ferri Compositæ ...	2-3-5 p.
" Ferri Iodidi.....	2-3-5 p.
" Galbani Compositæ	2-3-5 p.
" Opii (1 gr.).....	1-2 p.
Max.....	2-3 p.
" Phosphori.....	1-2-3 p.
Max.....	3-5 p.
" Rhei.....	2-3-5 p.
" Rhei Compositæ....	2-3-5 p.

DRUG.	DOSE.
Piper Nigrum.....	5-10-20 gr.
Piperina.....	1-5-10 gr.
Plumbi Acetas Astring.	1-2-3 gr.
Plumbi Acetas Hæmostat.	3-4-5 gr.
" Iodidum.....	¼-½-1 gr.
" Nitras.....	¼-½-½ gr.
Potassa Sulphurata.....	3-5-10 gr.
Potass. Acetas.....	10-30-60 gr.
" Bicarbonas.....	10-30-60 gr.
" Bitartr., Aper...	1-1½-2 dr.
" Purgat.	4-6-8 dr.
" Brom.,Sedative	10-20-30 gr.
" Hypnotic	30-45-60 gr.
" Carbonas.....	10-20-30 gr.
" Chloras.....	5-10-20 gr.
" Citras.....	15-30-60 gr.
" Cyanid.....	$\frac{1}{12}$-⅛-¼ gr.
Max.....	¼-⅓ gr.
" et Sod. Tartr. Aper.	1-1½-2 dr.
" et Sod. Tartr. Purg.	½-½-1 oz.
" Ferrocyanidum	10-15-30 gr.
" Hypophosphis.	5-15-30 gr.
" Iodid., Alter....	5-10-15 gr.
" Antisyph...	15-30-60 gr.
" Nitras.....	10-15-30 gr.
" Permanganas..	½-1-3 gr.
" Sulphas, Aper.	15-30-60 gr.
Purg.	2-3-5 dr.
" Sulphis.....	15-30-60 gr.
" Tartras.....	½-½-1 oz.
Pulvis Antimonialis.....	3-5-10 gr.
" Cretæ Comp.....	15-30-60 gr.
" Glycyrrh. Comp.	½-1-2 dr.
" Ipecac. et Opii...	5-10-15 gr.
" Jalapæ Comp.....	½-¾-1 dr.
" Opii.....	½-1-2 gr.
Maximum..	2-3 gr.
" Rhei Comp.....	1-2-3 dr.
Quinidinæ Hydrochlor. Tonic.....	1-3-5 gr.
" Sulphas Tonic.....	1-3-5 gr.
Quininæ Bisulph. Antipyret.	10-15-30 gr.
" Hydrochlor. Antipyret.	10-15-30 gr.
" Sulphas Antipyret.	10-15-30 gr.
" Valerianas.....	1-2-3 gr.

DRUG.	DOSE.
Resina Copaibæ	5-10-20 gr.
" Jalapæ	1-3-5 gr.
" Podophylli	⅛-½-1 gr.
Max,	1-2 gr.
Resorcinum	3-5-15 gr.
Rheum	5-15-30 gr.
Salicinum	10-15-30 gr.
Salol	3-5-15 gr.
Santonica	10-30-60 gr.
Santoninum	1-2-3 gr.
Sapo	5-15-30 gr.
Scilla	1-2-3 gr.
Senna	½-1-2 dr.
Sinapis, (Emetic)	1-2-4 dr.
Sodii Acetas	15-30-60 gr.
" Arsenias	$\frac{1}{24}$-$\frac{1}{12}$-⅛ gr.
Max	⅛-¼-½ gr.
" Benzoas	15-30-60 gr.
" Bicarbonas	10-30-60 gr.
" Bisulphis	10-15-30 gr.
" Boras	10-15-30 gr.
" Bromid., Sedative.	10-20-30 gr.
" Hypnotic	30-45-60 gr.
" Carbonas	10-15-30 gr.
" Carbonas Exsicc	5-10-15 gr.
" Chloras	5-10-20 gr.
" Chloridum	10-30-60 gr.
" Choleas	3-5-15 gr.
" Hypophosphis	5-10-30 gr.
" Hyposulphis	10-15-20 gr.
" Iodid., Alterative	5-10-15 gr.
" Antisyphil.	15-30-60 gr.
" Nitris	1-2-3 gr.
" Phosphas, Laxative	1-2-4 dr.
" Purgative	4-6-8 dr.
" Phosph. Exsic., Lax.	¼-1-2 dr.
" Purg.	2-3-4 dr.
" Salicylas	10-30-60 gr.
" Sulphas { Aper.	1-2-3 dr.
" Sulphas { Purg.	½-¾-1 oz.
" Sulphas Exsicc { Aper.	½-1-1½ dr.
" Sulphas Exsicc { Purg.	2-3-4 dr.
" Sulphis	10-30-60 gr.
" Sulphocarbolas	10-15-30 gr.
" Sulphoichthyolas	3 5-10 gr.

DRUG.	DOSE.
Sparteinæ Sulphas	⅛-¼-1 gr.
Spir. Ætheris Comp	¼-½-1 fl. dr.
" Æther. Nit., { Febrif.	¼-½-1 fl. dr.
" Æther. Nit., { Diuret.	1-1½-2 fl. dr.
" Ammon. Arom	¼-½-1 fl. dr.
" Camphoræ	5-15-30 m.
" Chloroformi	10-30-60 m.
" Gaultheriæ	10-15-30 m.
" Juniperi	15-30-60 m.
" Juniperi Comp	1-2-4 fl. dr.
" Lavandulæ	15-30-60 m.
" Menthæ Piperitæ	5-10-20 m.
" " Viridis	5-10-20 m.
Strychnina	$\frac{1}{64}$-$\frac{1}{32}$-$\frac{1}{24}$ gr.
Maximum	$\frac{1}{24}$-$\frac{1}{16}$-$\frac{1}{12}$ gr.
Strychn. Sulph	$\frac{1}{64}$-$\frac{1}{24}$-$\frac{1}{16}$ gr.
Max	$\frac{1}{16}$-$\frac{1}{12}$-⅛ gr.
Sulphur Lotum	1-2-3 dr.
" Præcipitatum	1-2-3 dr.
" Sublimatum	1-2-3 dr.
Syrup. Acidi Citrici	¼-½-1 fl. oz.
" Allii	1-2-3 fl. dr.
" Aurantii	¼-½-1 fl. oz.
" Calcii Lactophos	2-3-4 fl. dr.
" Ferri Iodidi	10-30-60 m.
" Ferri Quin. et Strych. Phos.	½-1-1½ fl. dr.
" Hypophosph. Com.	2-3-4 fl. dr.
" Ipecac, Expect	5-15-30 m.
Emetic	2-4-6 fl. dr.
" Krameriæ	2-4-6 fl. dr.
" Lactucarii	½-1-2 fl. dr.
" Pruni Virginianæ	2-4-6 fl. dr.
" Rhei	2-4-6 fl. dr.
" Rhei Aromaticus	2-4-6 fl. dr.
" Rubi	1-2-3 fl. dr.
" Sarsaparil. Comp.	2-4-6 fl. dr.
" Scillæ	½-¾-1 fl. dr.
" Scillæ Comp	¼-½-1 fl. dr.
" Senegæ	¼-½-2 fl. dr.
" Sennæ	1-2-4 fl. dr.
" Tolutanus	2-4-6 fl. dr.
" Zingiberis	2-4-6 fl. dr.
Terebenum	5-10-15 m.
Thallinum	3-5-10 gr.

DRUG.	DOSE.
Theina }	1-2-3 gr.
Theinæ Citras } Max...	3-5 gr.
Thymol.....	3-5-10 gr.
Tinct. Aconiti.....	1-2-3 m.
Max.....	3-5 m.
Tinct. Aloes.....	½-2-4 fl. dr.
" Aloes et Myrrhæ.	½-1-2 fl. dr.
" Asafœtidæ	½-1-1½ fl. dr.
" Belladonnæ.....	5-10-15 m.
Max.	15-20 m.
" Benzoini	10-15-30 m.
" Benzoini Comp...	15-30-60 m.
" Calumbæ.....	1-2-4 fl dr.
" Cannab. Indic.....	10-15-30 m.
Max.	30-60 m.
" Cantharidis.....	3-5-10 m.
" Capsici	10-30-60 m.
" Cardamomi Comp	1-2-3 fl. dr.
" Catechu Comp...	½-1-3 fl dr.
" Chiratæ.....	½-1-2 fl. dr.
" Cimicifugæ	1-2-4 fl. dr.
" Cinchonæ.....	1-2-3 fl. dr.
" Cinchonæ Comp..	1-2-4 fl. dr.
" Colchici Rad.....	5-15-30 m.
Max.	30-60 m.
" Colchici (sem.)....	10-30-60 m.
Max.	1-1½-2 fl. dr.
" Conii	15-30-60 m.
" Cubebæ.....	½-1-2 fl. dr.
" Digitalis.....	5-15-30 m.
Max.....	30-60 m.
" Ferri Acetatis.....	10-30-60 m.
" Ferri Chloridi.....	5-10-20 m.
" Gallæ.....	½-1-2 fl. dr.
" Gelsemii.....	5-10-20 m.
" Gentianæ Comp..	1-2-4 fl. dr.
" Guaiaci.....	½-1-2 fl. dr.
" Guaiaci Ammon.	½-1-2 fl. dr.
" Hellebori	15-30-60 m.
" Humuli	1-2-3 fl. dr.
" Hydrastis.....	½-¾-1 fl. dr.
" Hyoscyami	10-30-60 m.
Max...	1-2 fl. dr.
" Ignatiæ.....	5-10-15 m.
Max.....	15-20 m.

DRUG.	DOSE.
Tinct. Ipecac. et Opii ...	5-10-15 m.
" Jalapæ.....	½ 1-2 fl. dr.
" Kino	½-1-3 fl. dr.
" Krameriæ.....	½-1-3 fl. dr.
" Lavandulæ Comp	½-1-2 fl. dr.
" Lobeliæ Expect...	10-30-60 m.
Emet. (Asth.)	1-2 fl. dr.
" Lupulinæ.....	½-1-2 fl. dr.
" Matico	½-1-2 fl. dr.
" Myrrhæ	15-30-60 m.
" Nucis Vomicæ....	5-10-20 m.
Max.	20-30 m.
" Opii.....	5-10-15 m.
Max.....	15-30 m.
" Opii Acet.....	5-10-15 m.
Max....	15-30 m.
" Opii Camphor....	1-2-4 fl. dr.
" " Deodor.....	5-10-15 m.
Max.	15-30 m.
" Physostigmatis ...	10-15-30 m.
" Quassiæ	½-¾-1 fl. dr.
" Rhei.....	1-2-4 fl. dr.
" Rhei Aromatica..	½-1½-3 fl. dr.
" Rhei Dulcis.....	1-2-4 fl. dr.
" Sanguinar., Alter.	10-15-30 m.
" Emet.	1-2-4 fl. dr.
" Scillæ.....	5-10-20 m.
" Senegæ.....	½-1-2 fl. dr.
" Serpentariæ.....	1-2-4 fl. dr.
" Stramonii.....	10-15-20 m.
Max...	20-30 m.
" Strophanthi.....	3-5-10 m.
Max.	10-15 m.
" Sumbul.....	¼-½-1 fl. dr.
" Valerianæ.....	1-2-4 fl. dr.
" Valerian. Ammon.....	½-¾-1fl.dr.
" Veratri Virid.....	1-3-5m.
Max.	5-8 m.
" Zingiberis	½-1-2 fl. dr.
Veratrina	⅓₂-1/12-⅛ gr.
Max.....	⅛-¼gr.
Vin. Aloes	1-2-4 fl. dr.
" Antimonii, Expect.	10-15-30 m.
" Emetic	½-1-2 fl. dr.

DRUG.	DOSE.
Vin. Colchici Rad.....	5-15-30 m.
Max.	30-60 m.
" Colchici Sem.....	10-30-60 m.
Max.	1-1½-2 fl. dr.
" Ergotæ.....	1-2-4 fl. dr.
" Ferri Amarum.....	2-3-4 fl. dr.
" Ipecacuanhæ.....	5-15-30 m.
" Opii.....	5-10-15 m.
Max.....	15-30 m.

DRUG.	DOSE.
Vin. Rhei.....	1-2-4 fl. dr.
Zinci Bromidum.....	½-1-2 gr.
" Oxidum.....	1-3-5 gr.
" Phosphidum.....	$\frac{1}{24}$-$\frac{1}{12}$-$\frac{1}{6}$ gr.
Max.	$\frac{1}{6}$-$\frac{1}{4}$ gr.
" Sulphas, Astringent	1-2-3 gr.
" Emetic...	10-30-60 gr.
" Valerianas.....	½-1-2 gr.

GLEANINGS FROM THE GERMAN JOURNALS.

By Frank X. Moerk, Ph. G.

Test for Saccharin.—The suspected substance is extracted from acidulated solution with ether, the residue after the evaporation of the solvent is heated in a test tube with thrice its bulk of resorcin and a few drops of concentrated H_2SO_4. The fluid changes to yellow, red, dark green and then effervesces, through liberation of SO_2; the fluid is allowed to boil up several times and then set aside to cool. Extracted with water containing a little NaOH, the solution if saccharin was present, presents a pale rose tint by transmitted light, by reflected light a beautiful moss-green fluorescence. 0.001 gm. in 5 to 6 litres of water can be distinctly detected.—*Boernstein in Ztschr. f. Anal. Chem.*, 1888, 167.

Mel Depuratum.—Becker recommends 5 lbs. crude honey, 3 lbs. distilled water and 2 lbs. alcohol to be mixed, allowed to stand a few days, filtered, the alcohol distilled off and the residue evaporated. The product indefinitely preserves its light color.—*Pharm. Ztg.*, 1888, 313.

Detection of Salicylic Acid in Beverages and Foods.—Dr. Ripper offers the following, based on the solubility of the acid in a mixture of equal volumes of ether and petroleum-ether, in which extractive and tannin are almost insoluble. 50 cc. of the liquid, or if a solid a definite quantity mixed with water, are acidulated with 5 cc. of dilute H_2SO_4, and agitated with 50 cc. mixed ether and petroleum-ether in a separating funnel; should the liquids not separate readily, addition of a little alcohol will assist. The ethereal solution is removed and agitated with 50 cc. of ether-saturated water, to extract acetic acid which is

present especially in beverages, the ethereal layer filtered, the solvent evaporated and the residue dissolved in 20 cc. water. If a qualitative test is all that is required, a drop of $Fe_2 Cl_6$ is added; for a quantitave test, a few drops of phenol-phthalein solution are added and the liquid titrated with $\frac{1}{50}$ normal KOH.—*Pharm. Ztg.*, 1888, 317.

Hyoscyamine and Atropine.—A communication of the "Chemische Fabrik auf Actien," (formerly E. Schering,) to *Pharm. Ztg.*, 1888, 333, details results of the change of hyoscyamine into atropine. Attention was first attracted by the same lot of belladonna root, yielding varying mixtures of the two alkaloids or only atropine. Later experiments proved that by suitable methods, either alkaloid could be gotten in the pure state; that belladonna as well as hyoscyamus contains only hyoscyamine preformed; and that atropine is merely a molecularly re-arranged hyoscyamine. Atropine is formed by heating hyoscyamine at 110° C. for some time (this change was announced by E. Schmidt in *Pharm. Ztg.*, 1887, 542, almost a year previous to the above publication); on a large scale it may be obtained by treatment of hyoscyamine with alkalies, and by a number of other methods.

Thio-resorcin, a substitute for iodoform, is a sulphur derivative of resorcin made by the action of S upon the alkaline salts of resorcin. A yellowish inodorous powder, insoluble in water, difficultly so in alcohol but easily soluble in dilute alkalis.—*Rundschau*, 1888, 314.

Menthiodol, a new remedy for neuralgia, appears in the market in cones made by carefully melting 4 parts menthol and adding 1 part iodol. Should the mass be too brittle, a little camphor is advantageously added.—*Rundschau*, 1888, 315.

Carbonated Milk, used in dyspepsia, lung troubles, etc., as a substitute for kefir and koumys, is made by charging in a soda water apparatus fresh milk with 2 or 2½ volumes of CO_2. To render it more palatable 1.5—1 gm. NaCl and 0.5 $NaHCO_3$ are added to each quart; these additions also prevent change for a time.—*Palm, in Rundschau*, 1888, 376.

Cichory in Coffee.—Karz suggests the determination of chlorine as the means of establishing the purity of coffee. Coffee contains 0.03 per cent., cichory 0.28 per cent. of chlorine. 25 gms. should be used for incineration and the ash examined volumetrically with silver nitrate.—*Rundschau*, 1888, 390.

Chlorinated Lime will, according to Pattinson, loose its available

chlorine after some time, regardless of the precautions taken to preserve it. The hypochlorite gradually forms chloride and chlorate of calcium.—*Rundschau*, 1888, 452.

Antineuralgic Ointment.—Menthol 75, cocaine 25, chloralhydrate 15, petrolatum 500.—*Rundschau*, 1888, 453.

Sulpho-benzoate of Sodium is made by Heckel, by dissolving benzoic acid in a concentrated solution of sodium sulphite (molecular ratio 122-252. It is easily soluble in water, is used as an antiseptic dressing for wounds in the strength of 4 to 5 gm. in litre, is more active than phenol and belongs in the same class as mercuric chloride and iodoform without the objectionable properties of these. (See also AM. JOUR. PHARM., March, 1888, p. 136.)

Conversion of Camphor into Borneol and of Menthon into Menthol. The process patented in Germany by E. Beckmann, consists in dissolving camphor (or menthon or oil of peppermint), in a solvent indifferent to metallic sodium, with which the solution is repeatedly treated. The following expresses the change with camphor:

$$2\,C_{10}H_{16}O + Na_2 = C_{10}H_{15}ONa + C_{10}H_{17}ONa.$$

Camphor. Camphor Sodium. Borneol Sodium.

These compounds are decomposed by water and the mixture of camphor and borneol again treated with Na, until the camphor is completely changed into Borneol.—*Chemiker Ztg.*, 1888, 566. *Berichte, Ref.*, 321.

Oil of Eucalyptus globulus.—R. Voiry found the oil to yield: 1, an aqueous distillate containing formic and chiefly acetic acids; 2, butyr- and valer-aldehydes; 3, a dextrogyre terpene boiling at 158 to to 160° C., sp. gr. 0·88 at 0° C.; yielding a monochlorhydrate $C_{10}H_{17}Cl$ melting at 126°–128° C.; 4, eucalyptol (in the fractions between 170°–175° C. representing two-thirds of the oil); by cooling distillate by ice and salt and allowing crystals to drain and repeating the crystallization in the same manner several times, eucalyptol was obtained perfectly pure, as a mobile liquid, crystallizing at 0° C., melting at 1° C.; density at 0° C., 0·940; odor resembling mint and camphor; formula, $C_{10}H_{18}O$; optically inactive and yielding $2\,C_{10}H_{18}O.HCl$ with dry HCl at low temperature.

By distillation under reduced pressure (0·04 m.) a terpilenol was obtained at 130°–135° C.; this forms a dichlorhydrate $C_{10}H_{15}2HCl$. At 140°–145° C., the esters of acetic, butyric and valerianic acids of this terpilenol were gotten. Other distillation products were poly-

mers of $C_{10}H_{16}$ mixed with resinous bodies. A sulphurated compound is present in the oil, which, however, decomposes on warming with a solution of H_2S.—*Chem. Ztg. Rpt.*, 1888, 101.

A hektograph mass which prevents aniline inks from penetrating into the interior and which allows the ink to be removed simply by washing is made as follows: Isinglass 100, glycerin 600 and water 400.—*Pharm. Centrlh.*, 1888, 228.

Detection of Ceresin in Wax.—0·2 gm. of the sample is liquefied in a test tube and dissolved by gentle agitation in 5 gm. chloroform, corked and set aside until a temperature of 16°–18° C. is attained. Should ceresin be present a turbid, whitish layer is produced, varying in depth according to amount of adulteration.—H. Hager, *Pharm. Centrlh.*, 1888, 242.

Extracts of Aconite.—A summary of alkaloidal determinations of aconite extracts made according to the various pharmacopœias by Richard Kordes concludes his contributions in the *Pharm. Ztschr. f. Russl.*, 1888, p. 340. The extracts were made from the same lot of drug, the determination by volumetric estimation with Mayer's reagent. The menstrua were examined and if they precipitated the test solution, the amount of this was deducted from total precipitation.

LEAVES.

Authority.	Yield of Extr. from drug.	Solid matter in Extr	Percentage of alkaloid calculated for			Percentage of extracted alkaloid.
			Normal Extract.	Dry Extr.	Drug.	
Fol. Aconiti	.....	.....	.....	.....	0·3832	100·0
Ext. Gall. (aquos.)	45·3%	70·3%	0·49064	0·6979	0·22220	58·0
" Ross. (aq. sp.)	9·6	71·8	1·98080	2·7568	9·19015	49·6
" Fennic (spr.)	18·2	76·5	2·05680	2·6880	0·37430	97·6
" Helv. "	20·0	76·8	1·85860	2·4000	0·37170	96·9
" Internat. "	26·0	74·9	1·45680	1·9450	0·37870	98·8
" Rossic. (sicc.)	19·2	100·0	0·88070	0·8807	.....	.....
" Fennic. "	54·6	100·0	0·54830	0·5483	.....	.....

ROOT.

Rad. Aconit	.....	.....	.....	.....	0·7901	100·0
Ext. Austr	28·0	62·3	2·1694	3·4820	0·6074	76·8
" Ger	31·6	57·6	2·1114	3·6620	0·6672	84·4
" Ross	27·4	65·7	2·5559	3·8902	0·7003	88·6
" U. S	17·5	.....	5·4570	.....	0·7605	96·2
" Dieterich	36·0	68·3	1·8208	2·6666	0·6555	82·9
" Internat	40·0	66·2	1·8348	2·7695	0·7336	92·8
" U. S. Fluid	86·6	11·1	0·9066	8·1580	0·7851	99·3

Grains of Paradise in Pepper.—The detection is based on the former containing tannin from which both black and white pepper are free. The tannin is extracted with a mixture of two parts alcohol and one part ether, and after maceration, separation, and evaporation of the solvents, the addition of F_2Cl_6 produces green color.—*Ztschr. f. Nahrungsm. Unters.* 1888, p. 88.

To prevent Mould in solutions of Gum.—Hirschberg (*Pharm. Post*, 1888, p. 394), recommends the addition of a few drops of sulphuric acid which precipitates the lime as calcium sulphate, after the deposition of which the clear solution is decanted or strained. This solution shows no tendency to become mouldy even after standing eighteen months.

Sodium Salicylate in Tooth-ache.—Dr. G. Hofmann has used this salt successfully in half-hourly doses of 0.75 gm. It does not always afford a permanent cure, but will give relief for one or more days. —*Pharm. Ztschr. f. Russl.* 1888, p. 366.

Detection of Acetanilid (Antifebrin) in Phenacetin.—This latter compound used to a considerable extent in Europe, owing to its similarity to the acetanilid is liable to adulteration with this, the prices of the two favoring this. E. Mylius proposes the following as a test to indicate traces of acetanilid in phenacetin: 0·1 gm. phenacetin is warmed with 2 cc. solution of soda over a Bunsen burner; after addition of three or four drops of chloroform the mixture is again warmed when, if acetanilid is present, the characteristic offensive odor of isonitril is evolved. Phenacetin itself gives rise to a rather pleasant aromatic odor.—*Pharm. Ztg.*, 1888, p. 359.

English Smelling Salts consist almost exclusively of ammonium carbonate, leaving only a slight residue, on evaporation, of ammonium bi-carbonate. A superior product can be made by very carefully subliming the commercial carbonate, so that only the carbamate is volatilized.—*E. Mylius, Pharm. Ztg.*, 1888, p. 359.

Codeine is recommended by Dr. Lauder Brunton (*Brit. Med. Jour.*, June 2, 1888), in pain affecting the intestine and lower part of the abdomen. He advises ½ grain three times a day, and increases the dose to a grain if the patient is not relieved; it does not cause drowsiness nor does it interfere with the digestive functions. In long continued enteralgia, not due to organic disease, it has continued to relieve pain for months together.

ABSTRACTS FROM THE FRENCH JOURNALS.

Translated for THE AMERICAN JOURNAL OF PHARMACY.

ACID SOLUTIONS OF CORROSIVE SUBLIMATE.—Dr. Laplace (*Gaz. degli Osp.*) states that ordinary solutions of corrosive sublimate are inefficacious for fabrics used in surgical dressings, on account of the tendency to form mercuric albuminate; this is prevented by acidulating the solution. He also says that the antiseptic power of sublimate solutions is increased by such additions, so that weaker mixtures may be used with equally good effect. He thinks that where acids are thus used there is no need of iodoform. For lotions he recommends: Corrosive sublimate, 1 gm.; tartaric acid, 5 gm.; distilled water, 1000 gm. A solution in which to immerse gauze, bandages, etc., is composed of: sublimate, 5 gm.; tartaric acid, 20 gm.; distilled water, 1000 gm.—*Nouv. Rem.*, May 24, 1888. See also AM. JOUR. PHAR. 1887 p. 355.

INCOMPATIBILITY OF CHLORATE OF POTASSIUM AND IODIDE OF IRON.—According to the *Boll. Farm.* (*Arch. de phar.*, July 5, 1888), the death of a child was caused by the iodine resulting from the decomposition of these salts. The iron precipitates in the form of a sesquioxide, and the iodine is completely eliminated in accordance with the following formula: $2FeI_2+KClO_3=Fe_2O_3+KCl+4I$.

PHOSPHORUS AGAINST PHYLLOXERA. The *Bull. de la Soc. de phar. de Bordeaux* announces that tablets of phosphorus weighing one gramme planted (four to each vine) at a depth of 10 to 15 centimetres in the soil, kill or drive away the insects. The tablets may be coated with plaster (supposed to aid horizontal diffusion), or if the soil be calcareous, chloride of potassium may be used for that purpose. It is thought also that the phosphorus will form compounds with the soil elements to the advantage of the vines.

PLASTIC CEMENT FOR HOLLOW TEETH is formulated as follows in the *Gior. di Farm. e di Chim.*, No. 37, 1888: Paraffin, 7·50 gm; spermaceti, 7·50 gm; iodol, 4 gm; carmine, 60 cgm; yellow wax, 12 gm.

THE FLOWERS OF THE HORSE BEAN, Vicia Faba, *Lin.*, constitute a popular remedy in some parts of France. Dr. Bouloumié has verified their good effects in sub-acute nephritic colics with uric and phosphatic gravel, and in the pains symptomatic of renal calculus; also in a case of urethral pains from enlarged prostrate. He failed to relieve in a diabetic case of acute nephritic colic. The dose is 50 or 60 flow-

ers per cup of water, two cupfuls to be taken at beginning of pain.—*Bull. de la Soc. méd. prat.*, May 31, 1888.

SOYA HISPIDA, as described by M. Lecerf (*Soc. de méd prat.*, May 27, 1888), is a leguminous plant of Asiatic origin—now cultivated in Austro-Hungary—which possesses more proteic substances, phosphoric acid, potash and fatty matters than any other vegetable growth, and contains but 3·21 per cent of amylaceous and saccharated products. The analysis gives: Water, 9·37; proteids, 36·63; fats, 17·00; acid phosphor, 3·16; potash, 1·47. The Asiatics prepare a sort of milk from it which the Chinese make into cheese. The Japanese convert it into an alimentary liquid which they call shoyu. Bread made from it keeps fresh for several days. Dr. Dujardin-Beaumetz exhibited a sample of the latter at the *Acad. de Méd.*, May 29th, and recommended its use for diabetic patients.—*Arch. de phar.*, July 5, 1888.

TANRET'S REAGENT FOR ALBUMIN, PEPTONES AND ALKALOIDS IN URINE.—This reagent—a double iodide of potassium and mercury—precipitates these substances without the use of heat. If the precipitate does not re-dissolve with heat, the substance is albuminous; if it dissolves it is a peptone or an alkaloid. In the latter cases the cooled precipitate should be treated with ether, which dissolves an alkaloidal precipitate. It has been stated that this reagent gives insoluble combinations with certain normal elements of urine. M. Brasse (the author) finds that allantoïne, alloxane, creatinine, hypoxanthine, leucine, tyrosine, xanthine, etc., do not form such compounds. When the urine contains biliary salts the precipitate does not re-dissolve with heat, thus leading to a supposition that albumine is present; agitation with ether, however, re-dissolves the precipitate if in reality the urine is free from albumin.—*Arch. de phar.*, July 5, 1888.

ASSAY OF PYRIDINE.—Dissolve 5 ccm. of pyridine in 100 ccm. of water. To 25 ccm. of the solution, add 1 ccm. of a 5 per cent. solution of perchloride of iron. Hydrated oxide of iron separates in flakes. If the pyridine be pure, 15.5 ccm. of normal sulphuric acid will be required to take up the flakes; German commercial pyridine takes 12.2 to 12.7 ccm.; English pyridine takes 13.1 ccm.—*Arch. de Phar.*, July 5, 1888.

BROMIDE OF CONIINE.—In a severe case of tetanic convulsions in a child *aet.* 11, Dr. Demur gave immediately 1 cgm. of the drug hypodermically, and followed with doses of 5 mgm. by the mouth every

two hours. The child ingested 6 cgm. in 23 hours and the convulsions ceased. On the following day the child took 4 doses of 5 mgm. each, and in one week was perfectly well. No toxic effect was noted, but the child complained of weakness in the legs. Demur says that the dose for children is from 5 mgm. to 1 cgm.; adults may take 1 to 2 cgm. every hour until the effect is produced. The patient must be watched while taking the drug, on account of its paralyzing action upon the muscles of the respiratory organs.—*Nouv. Rem.*, July 8, 1888. (See also AM. JOUR. PHARM., 1888, p. 140.)

SACCHARIN IN GLUCOSE.—At the Paris *Conseil de Hygiène* (May 25th), M. Lepine stated that certain manufacturers had placed upon the market solid glucose and glucose syrups, containing from 1 to 2 grammes of saccharin to the kilo. A committee was appointed to investigate the sanitary aspects of the matter. In the meeting of June 22d, Dr. Dujardin-Beaumetz reported that the use of saccharin in aliments presented danger to the public health; saccharin was not an aliment but a medicament; if its use outside of therapeutics is not prohibited it will "augment the already too numerous falsifications of food products."—*Le Prog. méd., July* 7, 1888.

SUBSTITUTE FOR GUM ARABIC.—According to the *Union pharm.*, May, 1888, Trojanowsky believes he has discovered such a product in linseed mucilage. He boils the seed in water for an hour, filters, and precipitates with two volumes of alcohol. The mucilage goes down in flakes which he separates and dries, thus attaining a grayish-brown mass equal to 10 per cent. of the raw material. It is soluble in water, and is almost tasteless and odorless. The alcohol is recovered by distillation.

TERTIAN NITRITE OF AMYL ($C_5H_{11}NO_2$) is described by Bals and Broglio as possessing the physiological and therapeutic properties of the primal nitrite but without giving rise to the well-known toxic symptoms of the latter. The authors state also that its action is more strongly marked and of longer continuance, and that it does not produce the sensation of heat and tension in the face or throbbing in the temples usually caused by the nitrite now in use. It may be inhaled in quantities of 80 to 100 drops a day without danger or inconvenience, even in cases of weak heart. It has a slight hypnotic action, usually producing a half hour's calm sleep after each inhalation.—*Gior. della acad. di med. di Torino; Nouv. Rem.*, June 8, 1888.

DANGERS OF ANTIPYRIN.—Dr. Raoult (*Le Prog. méd.*, May 26, 1888,) brings together some of the cases in which the use of this medicament has gained unsatisfactory results. Among the symptons noticed by various observers were tumefaction of the face, urticaria, gastric disturbances, conjunctival catarrh, rapid pulse, cardiac oppression, leipothymia, tinnitus, cerebral depression and one case of amnesia, lasting for 18 hours. Sée states that all "these accidents are not rare and do not possess all the gravity attributed to them." The author's conclusions are, that "it remains a good medicament whose action is sure, but should be induced with circumspection. Its employment will certainly be more restrained when we learn its effects and understand better its proper indications and dosage. Then, we will have no more accidents, especially if we may be absolutely certain of the purity of the drug."

PRACTICAL NOTES FROM VARIOUS SOURCES.

BY THE EDITOR.

Iodotannate of Mercury, according to J. Nourry (*Bull. gén. Thér.*, April 30,) is a soluble compound and does not possess any appreciable metallic taste. For hypodermic use a solution is prepared from mercury 0.008 gm. ($\frac{1}{8}$ grain); iodine 0.03 gm.; kramerotannic acid 0.04 gm.; and glycerin 1 cc.

Nascent Silver iodide has been used with success in certain forms of conjunctivitis; and attention was again directed to this form of medication by Dr. Grasselli (*Recueil d'Ophthal.*), who for this purpose employs two solutions, one containing 3.56 gm. of silver nitrate, and the other 3.52 gm. of potassium iodide. The salts are dissolved separately each in 3.5 gm. of water and 6.5 gm. of glycerin, and the silver solution is kept in a blue or amber colored vial. For use two drops of the silver solution are mixed in a watch glass with three drops of the iodide solution, and this mixture is at once applied by means of a camel's hair pencil.

Permanent solution of mercuric chloride.—To the permanent solutions mentioned on pages 355 and 396 of our last volume, the following by Professor Kroenlein of Zurich is added from *Corr. Bl. f. Schw. Aerzte.* Mercuric chloride 10, sodium chloride 10, acetic acid 5, and water 75 parts. This 10 per cent. solution is intended to be kept

on hand for the rapid and convenient preparation of the weak antiseptic solutions containing $\frac{1}{20}$, $\frac{1}{10}$, etc., per cent. of mercuric chloride.

Prof. V. Meyer has shown (*Berichte Ch. Ges.*, 1887, p 1728) that though sodium chloride has a preservative influence on solutions of mercuric chloride, it does not prevent precipitation of a portion of the mercury if water having a great degree of hardness be used.

Preparation of infusion of digitalis.—A series of experiments made by Mr. Brocker, military pharmacist at Utrecht (*Jour. de méd. de Paris*, May 27), lead to the conclusion that, for preparing this infusion, only the parenchymatous portions of the leaves should be used, this containing one per cent. of digitalin, and that the veins and petioles should be rejected, because they contain only 0.02 per cent. of digitalin, and are apt to render the infusion gelatinous. Maceration for two hours at a temperature of 20°C. gives the best results; less satisfactory is the infusion made at 70°C., though it is still better than an infusion made by submitting the leaves to the action of boiling water for from five to fifteen minutes.

Pills of Agaricin.—As a remedy against the nightsweats of consumptives, and to lessen the laxative properties of agaricin, Jung has found the following combination of service: Agaricin 0.5 gm; Dover's powder 7.5 gm; powdered althæa, and powdered acacia, of each 4 gm; to be made into one hundred pills, of which two are taken daily.

Aqua Capsici, in use at the Philadelphia Hospital, is prepared by Jos. W. England from tincture of capsicum ℥ij which is triturated with calcium phosphate ℥ss until all the alcohol has evaporated, when sufficient water is added to make, after filtration, one pint. Capsicum water is a colorless liquid, having a warm pungent taste.

Aqua picis.—Tar water was observed by Dr. Saint-Marc (*Lancet*, May 12) to have a hæmostatic effect, particularly if prepared from pinewood tar. It has been used in pulmonary hemorrhage as well as in hemorrhage of the uterus and kidney, and may be administered in quantities of ten to fifteen drachms during a day.

Aqua chloroformi.—According to Dr. Unna (*Monatsh f. pr. Dermat.*) this water is a valuable vehicle for hypodermic solutions, partly on account of its local anæsthetic effect, and because it prevents the decomposition of Fowler's solution, of ergotin, and of many other substances.

Salol toothpowder.—Salol 3, powdered sepia 6; prepared chalk 24; magnesium carbonate 16; powdered sugar 6 parts. *Dental Reg.*

Dentifrice.—Creuse uses the following (*Les nouv. Remèdes*, May 24): Tonka 1 gm. and pumice in impalpable powder 8 gm.; triturate to a fine powder. Mix thoroughly Armenian bole 1 gm. with calcium carbonate 20 gm.; add to the preceeding, and thoroughly incorporate with magnesium carbonate 10 gm., powdered orris root 1 gm., and sufficient oil of mint.

Odontalgic paste.—Arsenious acid 2 gm.; hydrochlorate of cocaine 2 gm.; crystallized menthol 0.5 gm.; and sufficient glycerin to make a paste. Introduced into the cavity of the tooth, this causes the pain to rapidly disappear. *Bull. gén. Thér.*, April 30; *Gior. di farm. chim.*

Suppositories of glycerin.—Glycerin injections have been found to be of good service in habitual constipation. A more convenient method of administering the glycerin, according to Boas (*D. med. Woch.*, June 7) is by means of suppository capsules each containing 1cc. of glycerin.

Urethral pencils, retaining their shape for some hours, are recommended (*Monatsh. f. pr. Derm.*), to be prepared from cacao butter, 6; beeswax, 5; boric acid (or idoform, etc.), 2; zinc oxide, 1; and tragacanth, 4 parts. These pencils possess a certain degree of elasticity, and are best prepared of a conical form.

Salicylic collodion for the cure of warts is recommended by Vidal to be made from salicylic acid, 1 gm.; alcohol, 1 gm.; ether, 2-5 gm.; and collodion, 5 gm. It is applied daily. Salicylic collodion (strength not given) is also recommended by Dr. N. F. Penn (*N. Y. Med. Jour.*, May 19) as a sure cure for ringworm.

Ichthyol collodion, used as a local application for erysipelas, is prepared by Bilief (*Rev. Thér.*) from ichthyol, 1 gm.; ether, 1 gm.; and collodion, 15 gm.

Antineuralgic liniment.—Spirit of camphor, 90; ether, 30; tincture of opium, 6; chloroform, 20 parts. Apply with flannel.—*L' Union méd.*

Liniment for burns is recommended in *Centralbl. f. Ther.* to be made of salol, 1; olive oil, 6; and lime water, 6 parts.

Artificial cow's milk, as recommended by Dr. Ledentu, consists of white of egg, 16 gm.; almond oil, 35 gm.; sugar of milk, 40 gm.; sodium carbonate, 0·4 gm.; calcium phosphate, 0·5 gm.; and sodium

chloride, 0·2 gm; and sufficient water for one liter of emulsion.—*Concours méd.*, Jan., 1888.

Lipanin is the name given by Dr. Von Mering to a mixture of 100 parts of olive oil and 6 parts of oleic acid, which has been used as a substitute for cod liver oil. (See this vol., p. 243.) Lipanin is stated to agree well with patients, and not to disturb the digestion; being easily emulsified by means of weak alkaline liquids, it is readily absorbed from the intestines, and the patients gained in weight under this treatment. The daily dose is from one to three or four teaspoonfuls to children, and from one-half to three tablespoonfuls to adults. *Ther. Monatsh.*, Feb. 1888.

Fuchsin has been employed by Dr. Reiss (*Gaz. heb. méd. chir.*) in albuminuria with good success. The daily dose is from 1 to 5 milligrams, and in some cases 10 to 12 milligm. The urine acquired a red color; but no troublesome effects were noticed from the use of this salt.

Resorcin is considered by Dr. Andeer (*Centralbl. f. med. Wiss.*) to act as a preventive of sea-sickness, if taken on the appearance of the first symptoms, the dose being from 0·75 to 1·5 gm. In severer cases the dose is to be repeated two or three times daily until relief is obtained. Each dose is followed by a refreshing sleep usually lasting from three to five hours.

Guaiacol has been given in phthisis by Dr. Horner (*Prag. med. Woch.*) with the result of general improvement in many cases. The dose is from 0·2 to 0·5 gm. given in the form of pills.

Guaiacol exists in beechwood tar creasote, and may be prepared by the dry distillation of guaiac resin, or of vanillic acid and lime; it is also produced by heating pyrocatechin with potassa and potassium methylsulphate. It is methylpyrocatechin, is a colorless liquid of 1·117 spec. gr., boils at 200° C., and yields crystalline compounds with the alkalies and alkaline earths.

Atropine in Pilocarpine Poisoning.—Dr. Wicherkiewicz records in a Polish medical journal a case of poisoning by pilocarpine from eight minims of a two per cent. solution of pilocarpine administered hypodermatically. A subcutaneous injection of morphine and the inhalation of nitrite of amyl proving useless, two drops of a one per cent. atropine solution were administered hypodermatically. This had more effect, and the patient recovered.—*Med. News*, June 25.

SYSTEMATIC EXAMINATION OF SULPHATE AND HYDROCHLORATE OF QUININE.

By C. Hielbig.

Translated from *Pharm. Ztschr. f. Russl.*, 1888, 258, by F. X. Moerk, Ph. G.

The examination of these quinine salts has caused quite a number of processes to be devised, but not one of these can be relied upon in furnishing a positive answer regarding the purity of these salts. To frame a method which allowed the presence or absence of the more frequently occurring impurities, such as quinidine, cinchonine and cinchonidine to be proven in a simple and comparatively rapid manner, the majority of the published processes were carried out and their merits and defects ascertained; as the result the following compilation has been found to work successfully.

	For Sulphate.	*For Hydrochlorate.*
A.	1 gm. with 15 cc.	1 gm. and a solution of 0.4 gm. sodium sulphate in 1 cc. water, with 30 cc.

distilled water are agitated for 5 minutes, and filtered. To the filtrate is added 0.5 gm. Rochelle salt, agitated for 5 minutes, allowed to stand 5 minutes and filtered; the precipitate of tartrates is collected on a small filter and reserved, the filtrate for the

B. Detection of quinidine and cinchonine is divided into two portions, one of which is reserved; to the other add 1 drop of water of ammonia, and allow to stand for a few moments.

1. The solution remains clear; absence of quinidine and cinchonine, proceed E.

2. The solution becomes turbid; presence of quinidine and cinchonine or both; proceed C.

C. Detection of Quinidine. To the reserved portion (see B), add 0.5 gm. KI, shake for 5 minutes, allow to stand for same time. Observe either

1. The solution remains clear, if quinidine is absent; proceed D.

2. The solution becomes turbid or deposits tenacious resinous precipitate. In this case cinchonine must first be tested for according to D and then

a. In absence of cinchonine, the turbidity with KI indicates the presence of quinidine; proceed E.

b. In presence of cinchonine, the ammoniacal solution in B is

filtered, the precipitate washed with distilled water and the thalleioquin reaction[1] carried out with the precipitate. If the intense green color is produced there is quinidine present; if the green color is not produced quinidine is absent. Proceed E.

D. Detection of Cinchonine. The liquid after addition of KI is filtered and one drop water of ammonia added; set aside for a few minutes; there results:

1. Perfectly clear solution, in absence of cinchonine. Proceed E.

2. Turbid solution, if cinchonine is present. Proceed E.

E. Detection of Cinchonidine. If in the foregoing examination cinchonine or quinidine is found, the precipitate of tartrates (see A) is carefully washed with 15–20 cc. Rochelle salt solution (1–20); were these alkaloids not found this washing is superfluous. The precipitate is dissolved off the filter by use of 3 cc. dilute H_2SO_4 (1–20); to the solution 2 cc. ether and 1 cc. water of ammonia are added, the mixture is well shaken for one minute and allowed to stand at rest for five minutes. This shaking and allowing to stand is repeated several times (the time allowed not to exceed a half-hour). Notice:

1. The ethereal layer and the sides of the test tube remain perfectly clear in absence of cinchonidine.

2. The ethereal layer and the sides of the test tube become cloudy, if cinchonidine is present.

Remarks referring to Quinine containing Quinidine. By this method one-fourth or one-half per cent. quinidine cannot be detected. Often one or two per cent. quinidine will give no reaction with KI, but the presence can be ascertained by the addition of water of ammonia, which is a more delicate test. In the examination of quinine with ten per cent. quinidine nothing extraordinary is noticed, but in presence of fifteen per cent. and more of this alkaloid it is noticed on addition of Rochelle salt that the tartrates are not precipitated; this does not, however, interfere with the further detection of quinidine. Should more than fifteen per cent. quinidine be suspected, more KI must be used, otherwise it must be feared that the quinidine is not thoroughly precipitated and later may be mistaken for cinchonine. As a large percentage of quinidine prevents the separation of the tartrates and, as was found by special experiments, quinine sulphate mixed with quinidine sulphate is more difficultly soluble

[1] Excess of chlorine water prevents the thalleioquin reaction, while excess of ammonia favors it.

than the pure salt, there appears to exist a dependency between the two alkaloids.

Remarks referring to Quinine containing Cinchonidine. One-half per cent. of cinchonidine is easily detected within half an hour. Should the per cent. of cinchonidine be so minute that a precipitate can not be clearly distinguished, absence of the alkaloid must be decided upon, as the reaction is so characteristic that there can absolutely be no mistake. With one per cent. the reaction is more decided; with two per cent. there appears a deposit in the ether. Cinchonidine is recognized by the capillary rising of the precipitate beyond the ethereal layer, immediately after shaking the solution. Care must be exercised that not every slight turbidity at the line of contact of the two liquids be pronounced as cinchonidine; only in case the precipitate is capillarily attracted by the side of the test tube can there be no doubt regarding its presence. If the quinine contains ten per cent. cinchonidine there appears at the line of contact of the two liquids a white cretaceous ring. Cinchonidine, in the absence of quinine, is separated as a white precipitate in the ethereal layer.

Remarks referring to Quinine containing Cinchonine. One per cent. cinchonine is easily recognized; the more cinchonine present in the quinine the greater the precipitate with water of ammonia. When more than five per cent. cinchonine is present there forms on addition of KI a turbidity of cinchonine hydriodate, which can easily be mistaken for separated quinidine; ten per cent. causes a precipitate of a tenacious character similar to quinidine hydriodate.

CHARACTERS OF DIMETHYLOXYCHINIZIN.*

[*Antipyrin, Analgesin.*]

By F. Gay and H. Fortuné.

MELTING POINT.

The published statements with regard to the melting point of antipyrin are not concordant. Knorr gives 113° C.†; Regnauld gives 110°–112° C.‡; and others give from 110° to 113° C. We

*From the *Journal de Pharmacie*, June 15, p. 594. Reprinted from *Phar. Jour. and Trans.*, June 23, p. 1066.

† *Berichte*, xvi., 2597; xvii., 546, 2032; *Pharm. Journ.*, [3], xv., 341.

‡ "Traité de Pharmacie," ii., 964.

have examined from this point of view three samples of different brands and have found Knorr's antipyrin to melt at 105° C., antipyrin from the house of Mialhe to melt at 106° C., and antipyrin from the house of Casthelaz at 107° C. A partial explanation of the cause of these divergencies has been found in the considerable hygroscopic property of antipyrin. The above mentioned three products, dried in an oven for six hours at 100° C., and then over sulphuric acid for twelve hours, lost on an average 0·6 per cent. of their original weight. Exposed to the air they very rapidly absorbed moisture and recovered weight. The melting point of the products proved indeed to be identical; when completely dried they melted at 110° C.

SOLUBILITY.

Soluble in its own weight of water at 12° C., and with heat in half its weight of water. The aqueous solution is neutral.

Soluble in twice its weight of absolute alcohol, the solubility in this menstruum augmenting with the degree of dilution, so that it dissolves in its own weight of eighty per cent. alcohol.

Soluble in its weight of amylic alcohol, in fifty times its weight of ether, in one and a half times its weight of chloroform, and nearly insoluble in light petroleum spirit and benzin.

It is also very soluble in sulphuric, hydrochloric, nitric and phosphoric acids, with which it forms salts soluble in water.

OXIDIZING AGENTS.

Potassium Chlorate and Hydrochloric Acid.—Upon boiling the liquid becomes reddish-yellow; upon cooling, minute bright red oily drops separate. This red liquid is taken up by chloroform, which it colors greenish orange-yellow. Ether removes the coloring matter from chloroform and is colored golden-yellow.

Potassium Ferricyanide and Hydrochloric Acid.—Upon boiling becomes dark green. It deposits upon the sides of the tube a precipitate that in transmitted light shows an ultramarine color and in reflected light a bluish-green.

Chromic Anhydride.—In the cold an orange-yellow precipitate, the color of which gradually darkens. Precipitate dissolved by heat.

Potassium Permanganate.—In the cold reduction takes place. The liquid becomes purple-red, then brown, and finally colorless, with a deposit of oxide of manganese.

Manganese Dioxide and Dilute Sulphuric Acid.—Upon boiling a rose-colored liquid. Chloroform removes a part of the color, and, evaporated, leaves a brown residue that gives with water a colorless solution in which we have found unaltered antipyrin.

Potassium Bichromate and Sulphuric Acid.—In the cold reduction takes place; the liquid is colored green.

Strong Nitric Acid.—No change takes place in the cold if the acid be free from nitrous vapors; if it contain traces the liquid is colored green. With solid antipyrin, if heat be applied, nitric acid gives rise to a violent detonation.

Solution of Chloride of Lime.—In the cold, no change; with heat an energetic reaction, a brick-red precipitate being formed and the liquid colored yellow.

Sodium Hypochlorite.—In the cold, no change; with heat, a yellow coloration, but no precipitate.

Sodium Hypobromite.—With a concentrated solution of antipyrin a white precipitate in the cold, turning yellow on the application of heat, a separation taking place at the same time in the mass of the liquid of small drops of a brown liquid having an empyreumatic odor. In a one per cent. solution a drop of the reagent causes a slight precipitate which redissolves.

Chlorine Gas.—White precipitate. Chlorine water produces no change.

Bromine Vapor.—White precipitate, becoming brick red at the surface. Bromine water gives a light yellow precipitate soluble when heated.

Iodized Water.—2 cc. of the reagent and 1 cc. of one per cent. solution of antipyrin give a persistent brick-red precipitate.

Acid Nitrate of Mercury.—White precipitate.

REDUCING AGENTS.

Nascent Hydrogen.—After six hours treatment the antipyrin showed no alteration.

Nitrous Acid or Nitric Acid charged with Nitrous Vapor.—One drop of the reagent and 1 cc. of a one per cent. solution of antipyrin give a beautiful green coloration, still perceptible when diluted to 1 in 20,000; when heated the liquid becomes purple red. One cc. of the reagent and 1 cc. of a one per cent. solution give a golden yellow liquid; a slight excess of the reagent causes the liquid to pass to

orange and then red. The red liquid shows in the spectroscope a band extending from the middle of the green to the extremity of the violet. If the one per cent. solution be diluted with six times its volume of water, 1 cc. of the reagent will then give a series of tints passing from deep orange red to orange yellow, yellow, greenish yellow, and finally to emerald green. The red liquid gives in the spectroscope, in a layer a centimetre thick, an absorption band that extends from the orange to the extremity of the violet. The same reagent colors solid antipyrin red.

Sweet Spirit of Nitre.—The action of this reagent, as pointed out by Kennedy,* appears to us to approach that of nitrous acid. In the cold the one per cent. solution gradually assumes a deep green color, and after several deposits emerald-green crystals.

Hydriodic Acid.—Yellow precipitate dissolved by heat and reforming upon cooling. Solid antipyrin is easily dissolved in the reagent and the solution evaporated to dryness leaves a deep red residue soluble in water. Chloroform removes the iodine from this solution, in which antipyrin is then found unaltered.

DEHYDRATING AGENTS.

Phosphoric Acid.—With the solution no reaction. Solid antipyrin, heated with this reagent, undergoes instantaneous decomposition, with disengagement of slightly aromatic vapor.

Concentrated Sulphuric Acid dissolves antipyrin without coloration.

Zinc Chloride.—White precipitate.

ALKALOID REAGENTS.

Millon's Reagent.—2 cc. of reagent and 4 cc. of 1 per cent. solution in neutral solution give a white precipitate in a yellow liquid; in a solution acidified with hydrochloric acid, a yellow precipitate in an orange-yellow liquid, the precipitate eventually becoming red. In an acid solution of 1 in 1000, a yellow precipitate and green liquid. In an acid solution of 1 in 20,000, a white precipitate and yellow liquid.

Mayer's Reagent.—Yellowish-white precipitate in the acid solution.

Marmé's Reagent (potassio-cadmic iodide).—Yellowish-white precipitate if the solution be acid.

Fröhde's Reagent (impure molybdic acid).—Nothing, even in acid solution.

---

* *Pharmaceutical Record*, 1885, p. 415.

Erdmann's Reagent (sulphuric acid with a trace of nitric acid).—Greenish-yellow coloration in the acid liquid. If a slight excess of acid be added without mixing an orange zone is formed at the surface of seperation.

De Vrij and Sonnenschein's Reagent (sodium phosphomolybdate).—White precipitate in the acid solution.

Dragendorff's Reagent.—In acid solution green precipitate, then orange red ; liquid colorless.

Bouchardat's Reagent.—Brick red precipitate, the reaction being perceptible in an acidified solution of one in 20,000 of antipyrin. In an alkaline liquor a precipitate is no longer produced when diluted to one in 600.

Picric Acid (saturated solution).—Yellow precipitate, at first amorphous, but afterwards becoming crystalline. This reaction is perceptible in a solution of 1 in 4000. It can be carried out in the following manner : Place upon an object glass one drop of a solution of antipyrin ; then add a drop of picric acid solution. When the crystals have formed they can be seen under the micsoscope as yellow rectangular tables, or sometimes acicular, associated in a network or arborescent tufts. The two bodies react in a similar manner in alcohol solution, but the crystals are then larger.

Nessler's Reagent.—In acid solution, an abundant red-yellow precipitate.

Tannin.—Abundant white precipitate.

Gold Chloride.—Yellow precipitate.

Platinum Chloride.—Yellow precipitate.

OTHER REAGENTS.

Perchloride of Iron.—One drop of the reagent and 1 cc. of one per cent. solution give a blood-red coloration. This reaction is very distinctly manifest in a solution of 1 in 2000, and is still very perceptible in 1 in 50,000. The liquid reddened by perchloride of iron examined in the spectroscope in a layer one centimetre thick with diffused sunlight shows an absorption band extending from the orange to the violet.

Saturated Solution of Mercurous Nitrate.—One cc. of reagent and 2 cc. of one per cent. solution give a yellow precipitate floating above a blood-red liquid.

Saturated Solution of Mercuric Chloride.—One cc. of reagent and 2 cc. of solution give a white precipitate dissolved by heat.

Concentrated Solution of Stannous Chloride.—Yellowish coloration.

Concentrated Hydrochloric Acid.—According to several authors, if to 2 cc. of solution of antipyrin two drops of fuming hydrochloric acid be added the mixture is colored green, and changes to red if it be heated and a drop or two more of the acid be added. We have not been able to obtain any such reaction.

Antipyrin is consequently sufficiently characterized by the form of the crystals, the melting point of the dried substance and the foregoing reactions.

We have recognized that antipyrin resists the most energetic chemical agents. Blumenbach has shown that it resists the agents of putrefaction, and we have ourselves found it intact in urine that had been in full putrefaction for eight days. We have, on the other hand recognized that an aqueous solution of antipyrin is unsuitable to the development of inferior organisms, such as the fungi that attack the solutions of most of the alkaloids.

PYRIDINE.

By D. J. Leech.

Pyridine (C_5H_5N) is a volatile colorless liquid, with a strong odor and a burning taste, produced during the dry distillation of many forms of organic matter. It is present in animal oil (Dippel's) made by distilling bones, and also in coal tar; it is formed, too, during the combustion of tobacco, and probably during the burning of nitre paper and several other organic substances, the fumes of which are used for the relief of asthma. Harnach and Meyer's experiments[1] led them to look upon it as a stimulant of the motor centres and nerve endings. Bochefontaine,[2] on the other hand, found it to be a local irritant, though after introduction into the system it causes death by paralysis. Sée regarded it as a depressor of the reflex irritability of the spinal cord and respiratory centre, and as the active ingredient of the various fumes from cigarettes, medicated papers, etc., which give

[1] *Arch. f. Path. und Phar.*, XII., 395.

[2] *Comp. rend. de la Soc. de Biol.*, Ser. VII., Tom. III., p, 5.

relief in asthma. He says that, next to iodine, it is the most useful remedy in this ailment. (See *Medical Chronicle*, Sept., 1885.) The use of pyridine has since been advocated by Neft,[1] Kovacs[2] (see *Medical Chronicle*, June, 1887), and others. Silva[3] has examined further its action on the respiratory organs, and concludes that it acts by stimulating the trigeminal nerves, and thence the respiratory centre, which, however, it subsequently paralyses. It also influences the pneumogastric endings, causing increased secretion of the bronchial tubes. Like Bochefontaine, he found that its inhalation produced a tendency to sleep, from which he concludes that it also influences the cerebral cortex.

His[4] has made investigations to determine what becomes of pyridine when taken internally. He started with the idea that it would undergo changes somewhat similar to those of benzol, from which it differs only by the substitution of an atom of N for one of CH. Now, benzol, when introduced into the system, is excreted as phenol, but the phenol does not appear free in the urine alone, but in a compound paired with H_2SO_4. On giving acetate of pyridine to animals, however, he found, not what he expected, but methyl-pyridyl ammonium hydroxide ($OH.CH_3NC_5H_5$). Oechsner de Coninck, in a communication made to the Société de Biologie (1887) whilst acknowledging the possibility of such a transformation, asserts that, from experiments made in 1884, he is satisfied a considerable portion of the pyridine taken internally escapes unchanged in the urine, saliva, and breath exhalations.

De Renzi[5] has given pyridine internally. He finds that it decreases the frequency of the heart's action, and increases the force of the systole. It increases the blood pressure, and under its influence he has seen irregularity of the heart's action disappear. It lessens the frequency of respiration. He says that six to ten drops may be taken daily and the amount may be gradually increased to 25 drops. He recommends it in asystolism. He says it has the advantage over digitalis of acting quicker and not being cumulative. He has found it useful in angina pectoris.

---

[1] *N. York Med. J.*, 1886, XLIII.
[2] *Wien. med. Bl.*, 1886, IX.
[3] *Gaz. delle Cliniche*, June, 1886.
[4] *Arch. f. Path u. Phar.*, XXII.
[5] Riv. Clin. e. terap. Napoli, 1887.

Pyridine is not a pleasant remedy either to take internally or to inhale. It has an unsavory odor, but it seems worth a trial, when other remedies fail to relieve dyspnœa. See used it by placing about a drachm on a plate in a small room, in one corner of which the patient is seated. It may also be inhaled from water, in which it is soluble. Five to twenty drops may be added to 1½ oz. of water in an inhaler, or four or five drops may be inhaled from a pocket-handkerchief. With regard to its internal use, further clinical experience is required before such claims as De Renzi puts forth for it can be fully allowed.—*Med. Chronicle*, May, 1888.

SEPARATION OF RESINS.[1]

By G. Kliebhau.

The relative solubility in various solvents, and the behavior towards acetic, sulphuric, and nitric acids, boiling aqueous soda, and ammonia, afford the best means of separating the different resins. In the following experiments, the powdered resins were treated with three times their volume of the solvent at a temperature of 29–30°. In boiling water, colophony forms a half-melted mass; shellac, mastic, elemi, and dammar agglomerate; sandarach, copal, and amber remain unchanged. In alcohol, mastic, shellac, sandarach, and colophony are soluble; elemi soluble with difficulty; dammar and amber insoluble; copal agglomerates. In ether, dammar, colophony, mastic, elemi, and sandarach are readily soluble; amber and shellac insoluble; copal swells up. Carbon bisulphide dissolves dammar and colophony readily; mastic, elemi, and sandarach with difficulty; amber and shellac not at all. Benzene dissolves dammar, mastic, and colophony; sandarach and elemi with difficulty; whilst amber, shellac, and copal are insoluble. Light petroleum dissolves dammar and mastic readily; colophony, elemi, and sandarach with difficulty; amber, copal, and shellac not at all. Acetic acid causes colophony to swell, but is without action on the other resins. Sulphuric acid dissolves all resins, but causes charring and decomposition; dammar, on the other hand, when treated with sulphuric acid becomes bright red. Nitric acid

[1] *Jour. Chem. Soc.*, 1888, p. 761; *Pharm. Zeit. Russ.*, xxvi, 777—779.

colors mastic and sandarach bright yellow; elemi, a dirty yellow. Aqueous soda dissolves shellac readily; colophony with difficulty, but is without solvent action on the others. Colophony dissolves readily in strong ammonia; mastic, sandarach, and copal swell up before dissolving; whilst amber, dammar, shellac, and elemi remain unchanged.

ESTIMATION AND SEPARATION OF METALS BY MEANS OF SODIUM PYROPHOSPHATE.[1]

By G. Vortmann.

The behavior of metallic salts towards sodium pyrophosphate and acetic acid can be employed as a means of separating the metals, and the pyrophosphates thus obtained, being insoluble in water, dilute acetic acid, and solutions of ammonium salts, can be made use of for quantitative determinations.

Copper salts give with sodium pyrophosphate a bright blue precipitate, soluble in excess of the reagent; on adding acetic acid, a bright blue crystalline precipitate is obtained, the precipitation is, however, incomplete, and can be entirely prevented by the addition of sodium tartrate or sodium thiosulphate.

Cadmium salts give a precipitate soluble in excess. Acetic acid reprecipitates the salt almost completely even in the cold; by evaporating to dryness and digesting the residue with water, reprecipitation is complete. The addition of sodium tartrate or thiosulphate does not hinder precipitation.

Manganese salts yield a precipitate, soluble in excess, but completely reprecipitated by acetic acid; sodium tartrate does not prevent the precipitation.

Zinc salts behave similarly, but reprecipitation is complete only when the solution is evaporated to dryness and the residue taken up with water; sodium tartrate retards reprecipitation.

Cobalt salts give a gelatinous precipitate, soluble in excess; on shaking or heating gently, the solution becomes gelatinous but not if sodium tartrate is added. Acetic acid reprecipitates the cobalt salt. Presence of sodium tartrate does not prevent reprecipitation.

---

[1] *Jour. Chem. Soc.*, 1888, p. 755; *Berichte*, 1888, p. 1103.

Nickel salts behave similarly, but the addition of sodium tartrate prevents the reprecipitation with acetic acid.

Ferrous salts yield a precipitate soluble in excess, but completely reprecipitated on addition of acetic acid.

Ferric salts give a precipitate soluble in excess and not precipitated by acetic acid; on addition of acetic acid and sodium sulphite, reprecipitation is complete.

Aluminium salts give a precipitate soluble in excess, but completely reprecipitated by adding acetic acid and boiling; the addition of sodium tartrate prevents reprecipitation.

Uranic salts give a precipitate soluble in excess and not reprecipitated by acetic acid.

Chromic salts give a bright green precipitate which is scarcely soluble in excess even on boiling. Acetic acid prevents the precipitation of chromic salts, but the solution becomes turbid; the addition of sodium tartrate prevents the turbidity.

From the above results it will be seen that by means of sodium pyrophosphate copper can be separated from cadmium, cobalt from nickel, manganese and zinc from ferric salts, manganese from aluminium and uranium, and ferrous salts from aluminium and uranium, possibly also from chromium and ferric salts. Cadmium, zinc, manganese, cobalt, nickel, possibly also iron and aluminium, can be estimated as pyrophosphates.

ACTION OF BLEACHING AGENTS ON WRITING INK.[1]

By R. Irvine.

The author made a series of experiments to ascertain whether it is possible to tell the age of writing, and if writing has been executed at one and the same time, and if so, at what time. He selected writing one day, six months, 12 months, 2 years, 6 years, 14 years, and 22 years old, and exposed these writings to the action of a very dilute solution of bleaching powder, sp. gr. 1·001. In six minutes, the newly-written matter had disappeared; in from nine to twelve minutes, the writing of six months ago had disappeared; in twenty minutes, the writing of two years had partly disappeared, whilst in a like time the writing of six years ago was not greatly affected, of 14 years ago very

[1] *Jour. Chem. Soc.*, 1888, 764; *J. Soc. Chem., Ind.*, *VI*, 807—808.

slightly, and of 22 years hardly at all. Hydrogen peroxide acts more slowly but gives more definite results. When writing ink is thus bleached, most of the iron contained therein remains mordanted with the fibres of the paper, consequently writing so tampered with can be restored by the application of gallic or tannic acid. In determining the age of any particular writing, the following precautions should be observed:—(1) The inks must be those known as ordinary writing inks prepared from iron and chromium salts and galls. (2) Writing dried by means of blotting-paper is more easily removed than writing which is allowed to dry on the surface of the paper. (3) The bleaching solution must be exceedingly dilute, otherwise the action is so rapid and powerful, that both old and new writings are removed almost simultaneously. (4) The action must be carefully watched so as not to be too long continued. (5) Very old writing which has become brown by age, although it resists the action of weak solutions of bleaching powder and hydrogen peroxide, will show signs of giving way almost instantly when acted on by dilute nitric, hydrochloric, or oxalic acids.

PHARMACOPŒIA OF THE PHILADELPHIA HOSPITAL.

(*Continued from page* 317.)

Pulveres Bismuthi et Opii.

Each powder contains:

Bismuth Subnitrate.....	gr. x.
Powd. Opium.....	gr. j.

Dose: One powder

Pulvis Catarrhal.

Morphine Hydrochlor.....	gr. ½.
Powd. Acacia.....	gr. xxx.
Powd. Talc.....	℥jss.
Bismuth Subnit.....	℥jss.

Use; Insufflate into nostrils. Sajous.

Pulveres Rhei et Gentianæ.

Each powder contains;

Powd. Rhubarb,	
Powd. Gentian,	
Powd. Ginger.....	āā gr. iij.
Sodium Bicarbonate.....	gr. x.

Dose; One or more powders.

SACCHARA.

(Aromatic Diluents for Powders.)

Saccharum Anisi.

Oil of Anise.	q. s.
Acacia.....	℥j.
Sugar of Milk..... q. s. ad	℥j.

Saccharum Carui.

Oil of Caraway, q. s. etc., etc.

Saccharum Cinnamomi.

Oil of Cinnamon, q. s., etc., etc.

Saccharum Fœniculi.

Oil of Fennel, q. s., etc.. etc.,

Saccharum Menthæ Piperitæ.

Oil of Peppermint, q. s. etc., etc.

SUPPOSITORIA.

Sup. Acidi Tannici.

Each suppository contains:
Tannic Acid..... gr. v.
Dose; One suppository.

Sup. Cinchoninæ.

Each suppository contains:
Cinchonine Sulphate.....gr. v or x.
Dose; One suppository.

Sup. Iodoformi.

Each suppository contains:
Iodoform..... gr. v.
Dose: One suppository.

Sup. Opii.

Each suppository contains:
Powd. Opium.....gr. ½, j, or ij.
Dose; One suppository.

Sup. Opii et Belladonnæ.

Each suppository contains:
Powd. Opium..... gr. j.
Ext. of Belladonna..... gr. ¼.
Dose: One suppository.

Sup. Opii et Plumbi.

Each suppository contains:
Powd. Opium..... gr. j.
Lead Acetate..... gr. iij.
Dose: One suppository.

Sup. Quinidinæ.

Each suppository contains:
Quinidine Sulphate.....gr. v or x.
Dose: One suppository.

SYRUPI.

Syrupus Calcii Phosphatis.

Each teaspoonful contains:
Calcium Phos. (ppt'd)..... gr. v.
Hydrochloric acid..... m. ijss.
Syrup..... q. s. ad ƒ℥j.
Dose: One teaspoonful.
Wiegand.

Syrupus Cascaræ Sagradæ.

Each tablespoonful contains:
Fl. Fxt. of Cascara Sag..... ƒ℥j.
Syrup..... q. s. ad ƒ℥iv.
Dose: One tablespoonful.

Syrupus Chloralis.

Each teaspoonful contains:
Chloral Hydrate..... gr. x.
Syrup..... q. s. ad ƒ℥i.
Dose: One or more teaspoonfuls.
B. P.

Syrupus Phosphatis Comp.

Each teaspoonful contains:
Ferrous Phosphate (U. S. P. '80.): gr. j.
Calcium Phospate..... gr. ij.
Sodium Phosphate.....
Potassium Phosphate..... āā gr. ½.
Dilute Phosphoric Acid ..... q. s.
Syrup..... q. s. ad ƒ℥j.
Dose: One or more teaspoonfuls.
Parrish.

Syrupus Guaiaci.

Each teaspoonful contains:
Guaiac..... gr. v.
Solution of Potassa..... q. s.
Syrup..... q. s. ad ƒ℥j.
Dose: One teaspoonful.

Syrupus Hypophos. cum Ferro.

Each teaspoonful contains:
Ferrous Lactate..... gr. j.
Lactic Acid..... gtt. iv.
Syr. of Hypophos. Co... q. s. ad ƒ℥j.
Dose. One or more teaspoonfuls.

Syrupus Potassii Iodidi.

Each teaspoonful contains:
Potassium Iodide..... gr. vijss.
Syr. Sarsap. Co..... q. s. ad ƒ℥j.
Dose: One to two teaspoonfuls.

Syrupus Potassii Iodidi Co.

Each teaspoonful contains:
Corrosive Sublimate..... gr. 1/11.
Potassium Iodide..... gr. vijss.
Syr. Sarsap. Co..... q. s. ad ƒ℥j.
Dose: One to two teaspoonfuls.

UNGUENTA.

Unguentum Album.

Zinc Oxide..... gr. xxx.
Alcohol..... ƒ℥j.
Castor Oil..... q. s. ad ℥j.
Horner.

Ung. Acidi Carbolici.

Carbolic Acid..... ʒss.
Glycerin..... fʒj.
Cerate..... q. s. ad ʒj.

Ung. Hydrarg. Ammon.

White Precipitate..... gr. xl.
Cerate..... q. s. ad ʒj.
U. S. P. (1870.)

Ung. Hydrarg. Nit. Dil.

Citrine Ointment..... ʒiv.
Glycerin..... fʒj.
Cerate..... q. s. ad ʒj.

Unguentum Mauri.

Powd. Rhubarb.....
Powd. Opium..... āā ʒss.
Citrine Ointment..... ʒj.
Cosmolin..... q. s. ad ʒj.
Maury.

Ung. Peruvianum.

Balsam of Peru..... fʒjss.
Cerate..... q. s. ad ʒj.

Ung. Zinci Oxid. Carbol.

Carbolic Acid..... fʒss.
Glycerin..... fʒj.
Zinc Oxide Ointment... q. s. ad ʒj.

PROCEEDINGS OF STATE PHARMACEUTICAL ASSOCIATIONS.

The Arkansas Association of Pharmacists held its sixth annual meeting in Little Rock, in the Senate Chamber, June 12th, president W. W. Kerr in the chair. The report of officers and committees, propositions made by the president in his annual address, amendments to constitution and by-laws, and the draft of a pharmacy law, occupied the greater portion of the Association's time during the three days. W. W. Kerr, Batesville, was re-elected president; J. W. Beidelman, Little Rock, secretary, and E. P. Schaer, Little Rock, treasurer.

The Florida State Pharmaceutical Association held its first annual meeting in Tallahassee, May 8th, and was welcomed by ex-Governor Bloxham. President Robertson delivered an address, and reports were made by the secretary and treasurer. The Committee on Private Formulæ, by its chairman, Dr. J. D. Palmer, presented formulas for eight preparations which, with some changes, were adopted. A committee was appointed to prepare a pharmacy bill, send a copy of the draft to each member for criticism, and present a perfected bill to the next session of the legislature. A petition was signed for the reduction of the internal revenue tax on spirits. Dr. J. Dabney Palmer, Monticello, was elected president; S. P. Watson, Jacksonville, secretary, and H. V. R. Schrader, Tallahassee, treasurer. The regular meetings are to be held in May, according to the By-laws. The Association intended to meet next year at the same time and place as the State Medical Association; but the latter subsequently deciding to meet next year at Key West, on the second Tuesday in April, the Pharmaceutical Association will have to select another place.

The Minnesota Pharmaceutical Association met at Stillwater, June 12th, President Allen in the chair. The mayor extended the courtesies of the city. In the president's address various recommendations were made, the

most important, one perhaps, being the establishment of a department of pharmacy in the State University. The various officers and committees made their reports. The poison law, the revenue tax on alcohol, and other trade measures were fully discussed. The officers for the present year are: J. C. Henning, Stillwater, president; Karl Simmon, St. Paul, secretary; and Chas. L. Roos, New Ulm, treasurer. The next meeting will be held at St. Paul, June 11, 1889.

The Missouri Pharmaceutical Association had its tenth annual meeting at Pertle Springs, commencing June 19, President Gallagher in the chair. The president's address passed in review the progress of the Association, and made suggestions for future work. The reports of the secretary and treasurer, and of the different committees were presented and acted upon. Twenty-nine papers were received; among the titles we notice the following: "Preliminary Education of the Pharmacist," by Prof. Curtman; "Pharmacy Legislation," by Prof. Good; "Mineral Waters," by Dr Enno Sander; "Castor Oil," by G. H. C. Klie; "Oil of Citronella," by C. H. Ault; "Pharmacopœial Microscopy," by Prof. Whelpley; "Observations on Precipitates," by Prof. Wall; "Uses of Paper Pulp," by J. C. Falk, etc.

Prof. J. M. Good was elected president, G. H. C. Klie, secretary, and G. J. Meyer, treasurer. The next meeting will again be held at Pertle Springs, June 18, 1889.

The New York State Pharmaceutical Association convened its tenth annual meeting at the Prospect Park House, Catskill, June 19. President Sager presented an address, and the secretary, treasurer, and the various committees made reports, including a report from the Board of Pharmacy. A section of the Penal Code of New York, requiring the registration of the sales of all poisons and poisonous substances, caused some discussion, resulting in the appointment of a committee charged with securing a revision of this clause.

Among the papers read were the following: "Pharmacopœial Plants of New York State," by Dr. H. B. Huested; "Homes of South American Drugs," by Dr. H. H. Rusby; "Flowers and their Winged Friends," by Dr. R. G. Eccles; "Treatment and Distillation of Peppermint Plants," by A. M. Todd (see July number, p. 328); "Morphine Solutions," by Dr. Eccles; "Elixir of Phosphate of Iron, Quinine and Strychnine," by F. P. Dalzel; "Pharmaceutical Notes," by F. J. Wulling; "Pharmacopœial Assays," by W. G. Gregory, and several papers relating to trade matters. In a paper on "Factitious Glycerin," Prof. Bedford reported that he had been unable to find in the market a spurious article. In another paper he argued in favor of consolidating the four Pharmacy Boards of New York State into one body; and in a third paper he presented good reasons for not offering competitive prizes for essays read. Dr. R. G. Eccles, Brooklyn, was elected President, Clay W. Holmes, Elmira, secretary, and C. H. Butler, Oswego, treasurer. The next meeting will be held at Binghamton, at a date to be named by the Executive Committee. J. Schnell, Binghamton, is local secretary.

The Tennessee Druggists' Association held its annual meeting in Chattanooga May 2d. The usual routine business was transacted, several papers were read, and a committee was elected to draft a pharmacy bill, to be presented to the legislature at its next session. Dr. R. A. Sloan, Chattanooga, was elected president; J. L. Thompson, Nashville, secretary, and E. L. Laurent, Nashville, treasurer. The next meeting will take place at Memphis, May 8th, 1889.

The Texas Pharmaceutical Association held its ninth annual meeting in Austin, June 12. The president's address and the reports of officers and committees were appropriately disposed of. Papers were read by Mr. E. D. Oesch, Pharmaceutical Notes, and by J. D. Kennedy on the loco-weed, *Astragalus mollissimus*. The latter paper is of particular interest, because it shows that dogs are not affected by the loco-weed, given to them in infusion or decoction, except, perhaps, by an increase of appetite. Experiments upon herbivorous animals have not been made, so it appears, and this is to be regretted since the plant is credited with producing decidedly poisonous effects in horses and cattle. Any ill effects produced by this plant are ascribed by the author to its tough and indigestible character rather than to the presence of a poisonous principle.

The next meeting will be held in Dallas on the second Tuesday (14th day) of May, 1889, Theo. Meyer being chosen local secretary. J. W. Graham, Austin, is president; E. D. Oesch, Fort Worth, secretary, and E. W. Marshall, treasurer.

The following printed Proceedings of State Pharmaceutical Associations have been received:

Connecticut.—Twelfth meeting, Feb. 7-8, 1888. Pp. 100. See April number, p. 222.

Dakota.—Second meeting, Aug. 2-3, 1887. Pp. 32. With Report of the North Dakota Board of Pharmacy from May 11, 1887, to Jan. 1888. (Pp. 33.)

Florida.—May 8-9, 1888. See above, p. 425.

Virginia.—Seventh meeting, May 8-9, 1888. See July Number, p. 380.

EDITORIAL DEPARTMENT.

THE AMERICAN PHARMACEUTICAL ASSOCIATION will hold its thirty-sixth annual meeting in the city of Detroit, commencing Monday, September 3, and the Council will hold a session on the preceding day. The sessions of the Association will be held in the Detroit Light Infantry Armory, on Congress between Bates and Randolph streets, while the exhibition room is in the immediate neighborhood on Larned street.

The regular excursion rates have been granted by all the railroads belonging to the Trunk Line Association and the Central Traffic Association, the rate being full fare going to Detroit, and one-third highest limited fare for return trip, with no stop-over privilege. Before purchasing tickets for the

trip to Detroit blank certificates must be procured from the ticket agents in the territory of the Central Traffic Association from Niagara Falls, Salamanca, Pittsburg, Wheeling and Parkersburg and westward; for all points east of the cities named from the permanent secretary; but special arrangements have been made from Boston by Mr. J. W. Colcord, and the Detroit and Cleveland Steam Navigation Company has offered round-trip tickets between these two cities at $3, not including berths. These certificates must be signed by the ticket agent at the starting point, and must be endorsed by the local secretary, Mr. James Vernor in Detroit, before return tickets at the reduced rate can be obtained.

Arrangements for the accommodation of the visitors have been made with over a dozen hotels, of which the Russell, Cadillac, Benedict, Brunswick, Finney, Franklin, Madison, and others are located near the meeting room.

The Michigan State Pharmaceutical Association will likewise meet in Detroit, commencing on Tuesday, September 4, and it is proposed that a joint session of the two associations be held on Tuesday evening.

A committee of ladies of Detroit will be in constant attendance at the parlors of the Light Infantry Armory, which have been specially reserved for the use of the ladies.

The entertainments will comprise for the ladies a carriage ride on Wednesday, and a trip to Island Park on Thursday forenoon. On Wednesday evening a reception will be tendered to the officers. Thursday evening has been set apart for a visit to the Opera House, and for Friday, after adjournment, a boat ride of about 75 miles is contemplated across Lake St. Clair, and through the St. Clair flats ship canal. Badges entitling to admission to the different entertainments will be $3.

No arrangements for trips after adjournment have been planned; but the local secretary will give his services to those who may wish to make a special trip, and who will notify him of the time and number going. During the meeting the local secretary's office will be in the exhibition building.

The cause of the reduction in the price of Sulphate of Quinine has been explained in a report made to the Manufacturers' Club of Philadelphia, April, 1888, from which we quote the following:

The reduction in the price of Quinine was universal; as great in Europe as here, and was brought about by the large supplies of cultivated East India Bark, and not by the removal of the duty.

Formerly all Cinchona Bark came from South America, and the trees were not under any system of cultivation. Fearing an eventual failure of supplies of bark, England and Holland commenced the cultivation of the Cinchona trees in India, Java, etc. After a lapse of years, necessary to the growth of the plants, exports commenced, from India first, and then from Java. In February, 1861, the first instalment of seeds arrived in Ceylon, from South America.

In 1869, the export was but 28 ounces of bark.

1882-83,	Ceylon,	etc.,	exported	6,925,595,	and in	1883-84,	Java,	1,104,534	pounds	of bark.
1883-84,	"	"	"	11,500,000,	"	1884-85,	"	1,195,970	"	"
1885-86,	"	"	"	15,225,000,	"	1885-86,	"	1,531,156	"	"
1886-87,	"	"	"	14,007,500,	"	1886-87,	"	2,230,275	"	"

Sulphate of Quinine was made free in 1879, but to illustrate fully the effects of this legislative action upon this article, it is necessary to go back a few years beyond 1879, and compare the importations under a 20-per-cent ad valorem duty, with the importations which immediately followed the placing of Quinine upon the free list.

The importations for the past fourteen fiscal years, ending with the 30th of June in each year, have been as follows:

Years.		Ounces.	Years.		Ounces.
1874	20 per cent. duty	68,097	1881	Free	408,851
1875	" "	12,279	1882	"	794,495
1876	" "	22,746	1883	"	1,055,764
1877	" "	75,804	1884	"	1,263,732
1878	" "	17,549	1885	"	1,390,126
1879	" "	228,348	1886	"	1,251,556
1880	Free	416,998	1887	"	2,180,157

Not a single ounce of American Sulphate of Quinine was exported during this period. What other result could have been anticipated than the large importations presented above? * * * * Under moderate protection (and the duty of 20 per cent. ad valorem was a very moderate one) the 2,180,157 ounces of Sulphate of Quinine made in England, France, Germany and Italy, and sent to this country for consumption during the fiscal year ending June 30, 1887, would have been manufactured here.

The prices in Europe before and after the removal of the duty in the United States:

AVERAGE PRICES IN THE LONDON MARKET.

English, in 1-ounce vials,	13s. 2d. per ounce	— $3 16	in 1877.
French, " "	12s. 3d. "	— 2 94	
Italian and German, in tins,	11s. 8d. "	— 2 80	
English, in 1-ounce vials,	12s. 4d. per ounce	— $2 96	in 1879.
French, " "	12s. 4d. "	— 2 96	
Italian and German, in tins,	11s. 2d. "	— 2 68	

MAXIMUM PRICES IN THE LONDON MARKET, 1877.

English in one-ounce vials,	16s. 6d per ounce	— $3.96.
French "	15s. 9d "	— $3.78.
Italian and German in tins,	15s. "	— $3.60.

MINIMUM PRICES IN THE LONDON MARKET, 1887.

Now we submit the following as quotations named in the London market for Sulphate of Quinine, November, 1887:

English in one-ounce vials,	2s. 1d	— 50 cents in London.
French " "	2s.	— 48 " "
German and Italian in tins,	1s. 3d	— 30 " "

Here we have London prices for foreign makes of Quinine:

50 cents in 1887, against $3.96 for English, in vials, in 1877.
48 " " " 3.78 for French, " "
30 " " " 3.60 for German and Italian in tins, 1877.

As Quinine dropped, in price, throughout the world (from 80 to 90 per cent. between the years 1877 and 1887), and as English, French, German, Italian, and all manufacturers, irrespective of locality, lowered their figures, it follows logically that the controlling influence must have been one and

the same, viz.: The lowering of prices for Cinchona Bark, brought about by the large supplies from East India and Java.

The duty of 20 per cent. imposed on foreign Quinine by the tariff of the United States previous to July, 1879, certainly was not the cause of the high price which existed in Europe, and the removal of the duty did not reduce the price there. In Italy the duty on all Salts of Cinchona Bark is five francs per kilo, and the government pays the Italian manufacturer three and one-half francs per kilo on all exported.

The report was accompanied by a table giving the highest and lowest prices of American Quinine during each year from 1823 to May, 1888. This table agrees with the one furnished by Samuel F. Troth, for the years 1823-1853, and published in this journal 1879 page 156. To complete the record we give here the prices of American Quinine, from 1854 to May 18, 1888.

YEAR.	HIGHEST.	LOWEST.	YEAR.	HIGHEST.	LOWEST.	YEAR.	HIGHEST.	LOWEST.
1854	$2 50	$2 50	1866	$2 60	$2 25	1878	$3 60	$3 40
1855	3 00	2 60	1867	2 20	1 95	1879	3 60	2 60
1856	2 60	2 40	1868	2 35	1 90	1880	3 25	2 25
1857	2 00	1 40	1869	2 30	2 00	1881	3 25	1 90
1858	1 40	1 25	1870	2 30	2 10	1882	2 50	1 80
1859	1 50	1 25	1871	2 45	2 20	1883	1 80	1 60
1860	1 80	1 20	1872	2 45	2 40	1884	1 80	90
1861	2 10	1 80	1873	2 55	2 45	1885	1 05	75
1862	2 90	2 25	1874	2 50	2 20	1886	80	65
1863	3 25	2 70	1875	2 30	2 15	1887	70	46
1864	3 75	2 60	1876	2 70	2 20	1888	56	50
1865	3 40	2 20	1877	4 50	2 70			

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Twenty-fourth Annual Report of the Alumni Association, with the exercises of the Sixty-seventh Commencement of the Philadelphia College of Pharmacy for the year 1887-88. 8 vo., pp. 256.

This report, which may be obtained from the Secretary of the Association, Wm. E. Krewson, Ph. G., gives the minutes of the annual meeting, of the sessions of the Executive Board, of the social meetings held during the year, etc. The adddresses delivered at these meetings, and of which the titles were given on page 219 of our April number, are printed in full, together with some of the discussions had, and make the volume of permanent value also to others than the Alumni of the college. Necessarily, much of its contents are of particular interest to former students, and especially to the members of the last class.

The organization of the Association was effected July 15, 1864, the twenty-fifth anniversary of which date will probably be celebrated in some appropriate manner. It may have been this coming event which has suggested to some of the Alumni the inauguration of a movement for the

erection of a new building in front of those buildings now used by the college for its library, museum, lecture-rooms and laboratories, and for making such other alterations as may seem desirable. This is at least the end in view, as will be seen from the following notice printed on page 233 of the Report:

Philadelphia College of Pharmacy,
No. 145 N. 10th St.,
PHILADELPHIA, May 10, 1888.

The Alumni Association, realizing that the constantly increasing classes of the Philadelphia College of Pharmacy are taxing her present large and commodious buildings to their utmost capacity, and, knowing the *necessity* for increased facilities, feel that the *time has come* to extend a helping hand to our Alma Mater; and, through the undersigned committee, would ask the *liberal* assistance of all graduates of the college.

It is the desire of the Association to secure sufficient means to erect a suitable building upon the Tenth Street front (now occupied by dwellings), thereby giving largely increased facilities in the present buildings, by the removal of the museum, library, reading-room, some of the laboratories and offices to the proposed new building. To attain this end, the committee *strongly urge* all graduates of our college, and others interested in the advancement of scientific education, to extend their hearty and liberal support.

This appeal will be widely circulated among the friends of the college, *and there are surely very many who would gladly give a moderate amount to secure the completion of this much-needed improvement.*

Do not hesitate to forward *any amount, either large or small*, that you may be able to contribute, as all will be properly credited and acknowledged.

A *prompt response* will greatly facilitate the work of the committee, who are anxious to secure a sufficient sum to warrant the prosecution of the work *at as early a date as possible.*

Howard B. French, Ph. G., York avenue and Callowhill street,
Robert Shoemaker, N. E. cor. Front and Race streets,
T. Morris Perot, Ph. G., 314 Vine street,
Committee.

Dr. Clement B. Lowe, Ph. G., President Alumni Association, N. E. cor. Ninth and Vine streets.

Wm. E. Krewson, Ph. G., Secretary Alumni Association, 1829 N. Eighth street.

Thos. S. Wiegand, Ph. G., Actuary of the College, 145 N. Tenth street.

Coca at Home and Abroad. By Dr. H. H. Rusby; New York. Pp. 39.

Reprint from the March and May numbers of "The Therapeutic Gazette."

Water; Its Impurities Gathered from the Air and Earth. By C. W. Moore, M. D. San Francisco. Pp. 79.

Reprint from the March number of the "Pacific Record of Medicine and Surgery."

L' Huêtre de la Seudre. Par J. Gautret.

The oyster of the Seudre.—According to the maritime regulations the Seudre, on the west coast of France, is regarded as a branch of the sea, and not as a river. Here the oyster is cultivated.

The following inaugural dissertations, from the University of Dorpat, have been received:

Beiträge zur Chemie der Sinapis juncea und des ätherischen Senföls. Von Paul Birkenwald. Pp. 78.

Contributions to the chemistry of Sinapis juncea and of the volatile oil of mustard.

Untersuchungen des Inversions-Products der aus Trehalamanna stammenden Trehalose. Pp. 60.

Researches on the product of inversion of trehalose derived from trehala manna.

Beiträge zur Kenntniss des Lycaconitins. Von Emil Dohrmann. Pp. 56.

Contributions to the knowledge of lycaconitins.

Beiträge zur Toxikologie des Anilin. Von Roderich von Engelhardt. Pp. 69.

Contributions to the toxicology of aniline.

Sixth annual report of the Illinois Board of Pharmacy, with abstract of State Pharmacy Register, 1887. Springfield, Ill. 8vo., pp. 113.

A very full and comprehensive report, giving also a list of 84 cases prosecuted during the year ending June 30, 1887, for violations of the pharmacy law.

Contributions from the Herbarium of Columbia College, No. 4. By N. L. Britton and H. H. Rusby, pp. 14.

A list of plants collected by Miss M. B. Croft, at San Diego, Texas. Reprint from Transactions of the New York Academy of Sciences.

The Future of Pharmacy. By John Humphrey.

A paper read before the Sheffield Pharmaceutical and Chemical Society, and reprinted from the Pharmaceutical Journal.

Partial Syllabic lists of the Clinical Morphologies of the Blood, Sputum, Feces, Skin, Urine, Vomitus, Foods, including Potable Waters, Ice and the Air, and the Clothing (after Salisbury.) By Ephraim Cutter, M. D., etc. New York: Published by the author, 1888. 8vo. Pp. 81. Price in cloth, $1.

The author applies the term morphology to the account (*logos*) of the forms (*morphos*) found in and upon the articles named in the title.

Some Retrospective and Prospective Thoughts on Surgery. By Donald Maclean, M. D., Detroit. Pp. 33.

Address before the American Medical Association, reprinted from the Journal of that Society.

Report of the Board of Managers of the Pennsylvania Hospital to the contributors, at their annual meeting, held fifth month, 7th, 1888. Philadelphia. 8vo. Pp. 14.

The Pennsylvania State College Agricultural Experiment Station. Bulletin, No. 3.

West Chester, Pa., the most important suburb of Philadelphia; its industrial and commercial resources; its healthfulness and social and educational advantages; its business opportunities and railway facilities, statistics, etc. Published under the auspices of the Board of Trade, 1888. 8vo. Pp. 96. Illustrated.

The reception of the above pamphlets is acknowledged.